MIRA MESA COMMUNITY PLAN UPDATE

Existing Mobility Conditions

The City of SAN DIEGO

JUNE 2019

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1 INTRODUCTION

The following section introduces the Existing Mobility Conditions of the Mira Mesa Community Plan Update.

Report Purpose and Applicability

The current Mira Mesa Community Plan was originally approved in 1992 and has seen several amendments since then. The Plan identifies several key issues, goals, and implementation actions for Mira Mesa, including improvements to the transportation system. This comes in the form of relating development intensity to capacity of the network and encouraging development of facilities and services that fulfill the daily needs of local residents, commuters, and visitors.

The Mira Mesa Community Plan Update was initiated in 2018 to provide direction and guidance for future community growth and development. The Mobility Element is one component of the community plan, and directly correlates with the Land Use Element. This relationship supports the ability to plan and provide for a balanced, multimodal transportation network that can meet future community travel demands. The Mobility Element provides guidance on the transportation network, including pedestrian, bicycle, transit, and vehicle modes of travel.

The purpose of this Existing Mobility Conditions report is to summarize the existing conditions within the community for all modes of transportation, and identify potential deficiencies, conflicts, and needs that could be addressed through future improvements to the transportation network. The Existing Mobility Conditions is a critical building block in the preparation of the land use plan and future transportation system. Key features of this document include:

- Describing the analysis methods and techniques used to evaluate a mobility network,
- Evaluating existing mobility conditions for all modes,
- Identifying opportunities for potential transportation network enhancements,
- Informing land use planning by providing adjacent transportation network conditions,
- Establishing a baseline condition for the environmental documents, and
- Educating the stakeholders and plan preparers of current conditions.

Regional Location and Planning Boundaries

The Mira Mesa community is located in the north central portion of the City of San Diego, 16 miles north of downtown San Diego. Mira Mesa is located between Interstate 805 (I-805) and Interstate 15 (I-15), with Marine Corps Air Station Miramar to the south and Los Peñasquitos Canyon Preserve to the north. Mira Mesa is bounded on the north by the communities of Torrey Hills, Carmel Valley, and Rancho Peñasquitos; on the east by Miramar Ranch North and Scripps Miramar Ranch; on the south by Marine Corps Air Station Miramar; and on the west by the University and Torrey Pines communities. **Figure 1-1** depicts the location of the Mira Mesa community in a regional context.

The Mira Mesa community is approximately 10,500 acres in area, with a population of over 70,000. The western and southern portions of the community are primarily employment and industrial areas, while the northeastern portion of the community is primarily residential. Miramar College is located on the east side

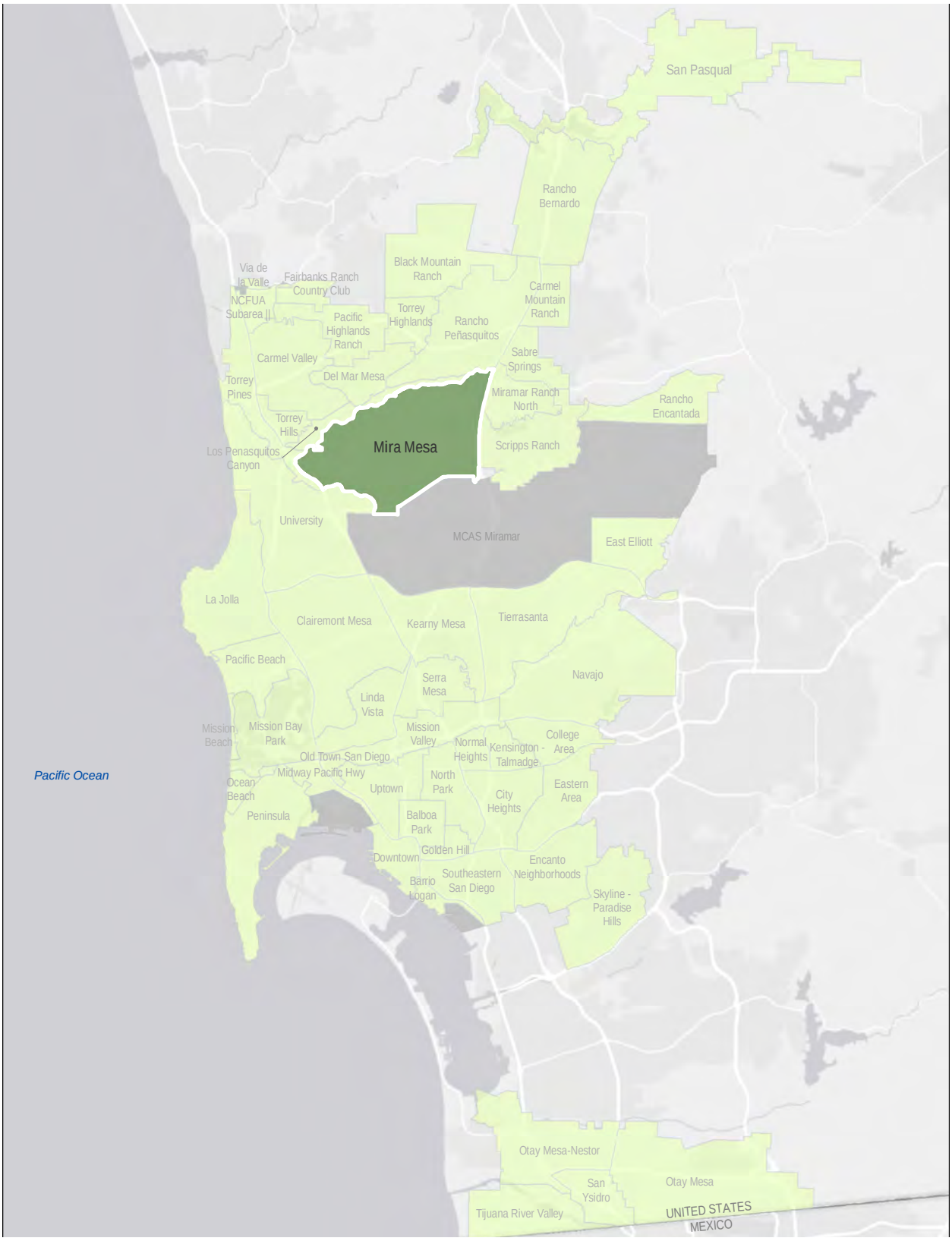
of the community with the Miramar College Transit Station serving multiple local and regional bus routes. **Figure 1-2** shows the community boundary in a localized context.

Supporting Information

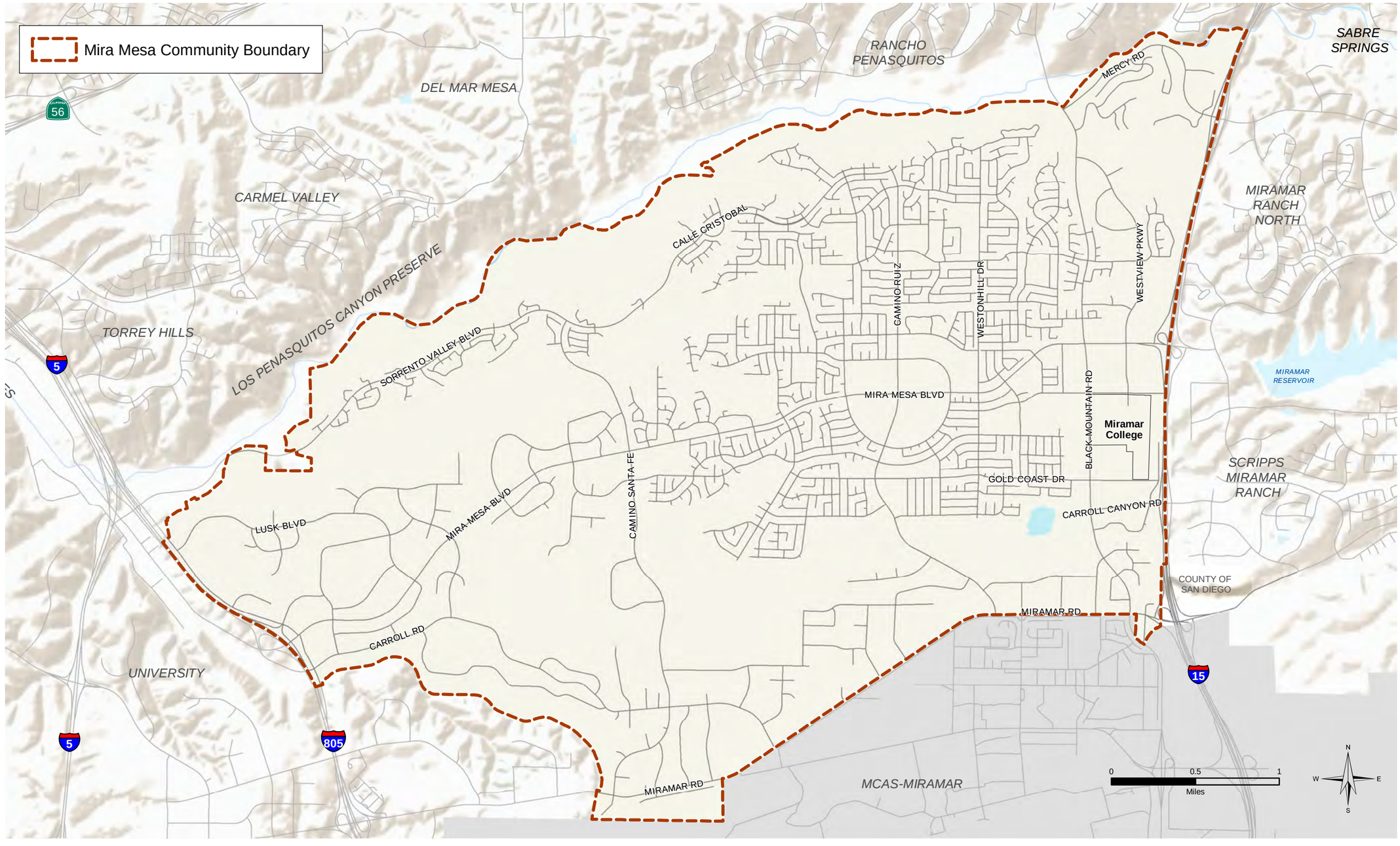
Several previously-published planning documents will also be used to guide the development of proposed improvements to the mobility network in Mira Mesa. The following planning documents were referenced for consistency throughout the planning process:

- *City of San Diego General Plan (2008)*
- *City of San Diego Climate Action Plan (2015)*
- *Adopted Mira Mesa Community Plan (1992)*
- *City of San Diego Bicycle Master Plan (2013)*
- *City of San Diego Pedestrian Master Plan (2006)*
- *San Diego Forward: The Regional Plan (2015)*
- *San Diego Regional Bike Plan (2010)*

Other planning efforts and documents are also relevant to understanding the existing mobility conditions in Mira Mesa. A more complete synopsis of these documents and their relationship to the Mira Mesa community are provided in Chapter 3. Additionally, the proposed improvements included in the Mira Mesa Community Plan Update will be incorporated into future local and regional planning efforts.



Regional Vicinity Map



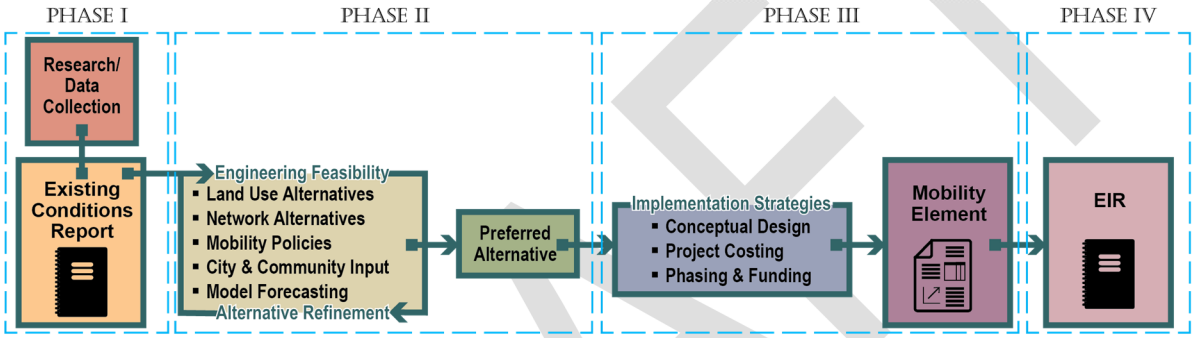
Community Boundary

Community Plan Update Process

A four-phased planning process is being undertaken to develop the Mira Mesa Mobility Element. As depicted in **Figure 1-3**, the four phases include:

- Phase I: Existing Conditions Assessment
- Phase II: Developing Recommendations
- Phase III: Plan Development and Implementation Strategies
- Phase IV: Environmental Analysis

Figure 1-3 Community Plan Update Process



Existing Conditions Assessment (Phase I): This initial phase documents current pedestrian, cycling, transit and vehicular systems and associated travel behaviors in the community. Travel demands, deficiencies, opportunities and constraints are extensively analyzed and documented for each mode.

Developing Recommendations (Phase II): This phase is focused on identifying and crafting a vision for overall mobility in the community, and then developing policy language and mobility network recommendations to help achieve the vision. This phase is supported by the involvement of the significant community, City staff, and other key stakeholders.

Plan Development and Implementation Strategies (Phase III): Following the development of a preferred network, the Mobility Element is initiated. The Mobility Element summarizes existing conditions and issues for each travel mode, supporting policies, and plan proposals. Implementation strategies are developed at this stage, including conceptual designs, project cost estimating, project phasing and the identification of potential funding sources.

Environmental Analysis (Phase IV): An Environmental Impact Report (EIR) is anticipated for the Community Plan Update. The Transportation Section of the EIR will be based on mobility information developed during Phases I through III and will analyze and disclose potentially significant traffic impacts, as well as mitigation measures to lessen the impacts. The EIR is circulated for a public review period to receive comments. The project team provides responses to the comments and identifies and discloses any modifications to the Community Plan Update or its EIR, if applicable, before seeking approval from Planning Commission and City Council.

Organization of the Report

Following this introductory chapter, the report is organized as follows:

- **Chapter 2** describes the methodologies used to analyze conditions of the existing transportation system;
- **Chapter 3** summarizes planning documents relevant to the Mira Mesa Community Plan Update Mobility Element
- **Chapter 4** describes existing conditions and analysis methodologies for the pedestrian, bicycle, transit, roadway, and freeway networks. This chapter also includes discussions on parking utilization, Intelligent Transportation Systems (ITS), and Transportation Demand Management (TDM) strategies, as well as airport, passenger rail, and goods movement within the community.
- **Chapter 5** concludes with a summary of key mobility needs to be considered as the planning process moves forward.

2 METHODOLOGY

The following section describes the methodology used to determine the study area and evaluate existing conditions of the mobility network within the Mira Mesa community. The existing conditions evaluation process includes the following analyses:

Pedestrian	Demand	• Using existing peak period pedestrian counts • Based upon the Pedestrian Priority Model (PPM) • Based upon census-based mode share data • Using route typology definition
	Safety	• Using pedestrian-related collision data for the past five years
	Quality	• Using Pedestrian Environment Quality Evaluation (PEQE) analysis
	Connectivity	• Using pedestrian network and sidewalk inventory data • Using a walkshed ratio evaluation
Bicycle	Demand	• Using existing peak period bicycle counts • Based upon the Bicycle Demand Model (BDM) • Based upon census-based mode share data
	Safety	• Using bicycle-related collision data for the past five years
	Quality	• Using Level of Traffic Stress (BLTS) analysis
	Connectivity	• Using a bikeshed ratio evaluation • (Low-stress) Using combination of BLTS and bikeshed evaluations
Transit	Demand	• Using existing transit ridership information • Based upon census-based mode share data • (Potential) based upon census-based population density data • (Potential) based upon LODES employment density data
	Safety	• Using pedestrian- and bicycle-related collision data for the past five years
	Quality	• Using inventory of transit stop amenities • Using roadway speed simulation analysis
	Connectivity	• Using walkshed and bikeshed ratios near major transit stations
Vehicle	Demand	• Using existing peak period turning movement and daily volume counts
	Safety	• Using vehicle collision data for the past five years
	Quality	• Using roadway level of service based on volume-to-capacity ratio • Using roadway travel time level of service based on speed • Using intersection level of service based on delay • Using freeway level of service based on density • Using freeway ramp capacity based on volumes and queues
	Connectivity	• Using vehicle miles travelled

2.1 PEDESTRIAN

Pedestrian Study Area

The pedestrian study area was identified in coordination with City staff, and includes areas which meet one or more of the following criteria:

- **Existing Pedestrian Demand:** The Pedestrian Priority Model (PPM) was used to document relative pedestrian demands across the Mira Mesa community. The model consists of three submodels – trip attractors, generators, and detractors – reflecting high pedestrian propensity along with potential barriers or safety concerns. Thresholds for high demand were established relative to the community itself and not relative to the City as a whole. Areas with a score that is above the community average and along circulation element roadways were selected
- **Pedestrian Safety:** locations with two or more pedestrian collisions over the analyzed five-year period
- **Proximity to Transit:** areas within a half-mile of a major transit stop

In addition to the criteria above, the pedestrian study area was expanded in coordination with City staff to include major and collector roadways, as well as corridors that satisfied pedestrian network gaps or connections to schools and parks. The pedestrian study area is identified in **Figure 2-1**.

Pedestrian Demand

Pedestrian demand was evaluated using four different sources and methodologies:

1. Pedestrian Count Data
2. City of San Diego's PPM
3. US Census Survey Information
4. Pedestrian Route Typology

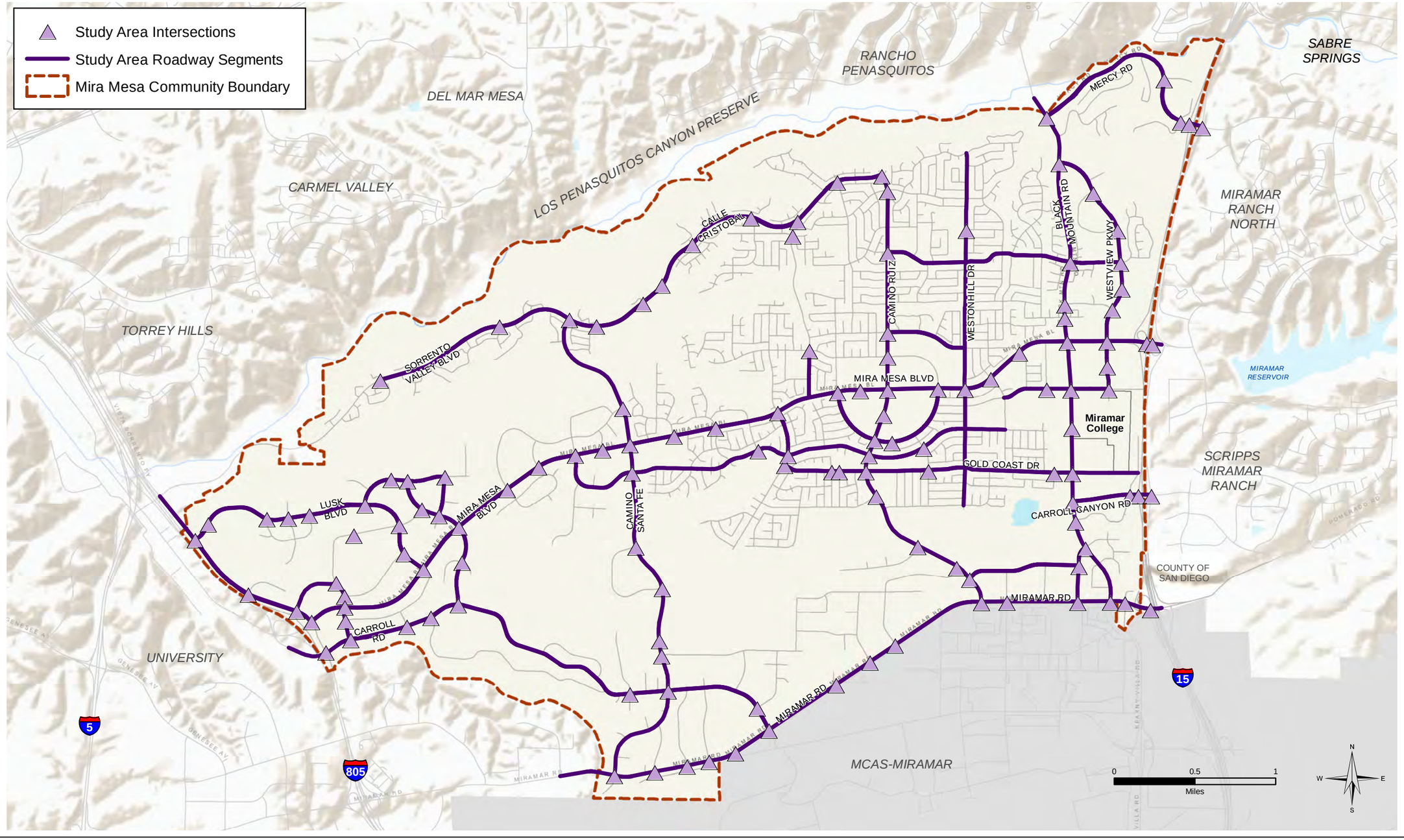
PEDESTRIAN COUNT DATA

Existing pedestrian demand was determined using turning movement counts conducted for the vehicular analysis portion of this project. Vehicles, pedestrians, and bicycles were counted at 92 intersections during the AM and PM peak periods. A summary of peak hour volumes is provided in **Section 4.1.1**.

CITY OF SAN DIEGO PPM

The City of San Diego's City PPM was used to evaluate the relative pedestrian demand within the Mira Mesa community. The PPM evaluates pedestrian demand based on existing land use and other characteristics within the built environment. The PPM determines demand based on three types of amenities: pedestrian trip attractors, trip generators, and trip detractors. A summary of land uses and other amenities in each category is shown below in **Table 2-1**. Using the factors in the table, the PPM identifies pedestrian propensity land uses and population concentrations. The PPM also considers factors indicating potential pedestrian barriers or safety issues.

The PPM was used in determining the pedestrian study area. Using the PPM in GIS format, the data was filtered to show areas with values above the average score of the community's dataset. The average score for the community identified as just under 18, and high pedestrian demand areas were identified as scoring 18 or higher. These high demand areas were also used in the pedestrian quality and connectivity assessments. This is described in more detail in **Section 4.1.1**.



Pedestrian Analysis Study Area

Table 2-1 Pedestrian Demand Factors

Category	Pedestrian Demand Factors
Attractors	Schools, Universities, Neighborhood Civic Facilities, Neighborhood and Community Retail, Parks and Recreation Facilities, Proximity to and Ridership at Transit Stops/Stations
Generators	Population and Employment Density, Age, Income, Disability Density, Mixed Land Use Density
Detractors	Collisions, Traffic Volumes, Traffic Speeds, Lack of Street Lighting, Barriers

Source: Active Travel Assessments, Integrating Bicycle, Pedestrian and Transit Evaluation in Long Range Planning (City of San Diego, 2017)

US CENSUS SURVEY DATA

In addition to the PPM assessment of pedestrian demand, the American Community Survey[1] (ACS) 5-year estimates commuting data (2012-2016) was utilized to understand the existing commute mode share by walking for the community. The ACS commuting data provides information about the means of transportation to work by employees 16 years and older for each census block group[2]. The means of transportation to work represents the commute mode within the community.

The ACS commuting data was filtered to the census block groups within the Mira Mesa community boundary. The "pedestrian commute mode share" was then calculated as a percent of the total mode share. This was accomplished by taking the number of employees in Mira Mesa who walk to work, divided by the total number of employees for each block group in the community, and multiplying it by 100 to develop a percent as shown below:

$$Pedestrian\ Commute\ Mode\ Share = \left(\frac{Total\ number\ of\ employees\ who\ walk\ to\ work}{Total\ number\ of\ employees\ within\ each\ block\ group}\right) \times 100$$

The "pedestrian commute mode share" was compared to City and County of San Diego average pedestrian mode share percentages.

[1] The American Community Survey (ACS) is conducted by the US Census Bureau and provides estimates of the characteristics of the population over a specific time period at various geography levels. ACS data is available via Tiger/Line at various geographic levels.

[2] US Census block groups are statistical divisions of census tracts. A block group consists of clusters of blocks within the same census tracts. Block groups are generally defined to contain between 600 and 3,000 people.

PEDESTRIAN ROUTE TYPOLOGY

The Pedestrian Master Plan includes a comprehensive analysis of existing conditions and needs within a community. The pedestrian route typology methodology was established in Appendix B[3] of the City's Pedestrian Master Plan effort and is presented in **Table 2-2**. This methodology establishes criteria for defining pedestrian route types and ultimately developing priority pedestrian improvements.

Pedestrian route type criteria and data sources used in determining the appropriate typology for each facility within the Mira Mesa community are identified in **Table 2-2**. To determine typology within the community, the data sources shown in Table 2-2 were overlaid on each other. The circulation element routes within the community were then given an assumed typology based on guidance provided in Figure 2-1**.**

Table 2-2 Pedestrian Route Type Criteria

Phase I Pedestrian Route Type Criteria	Phase 2 & 3 Operationalization of Route Type Criteria	Data Sources
Street Design Manual Classification	Circulation Element Roadway Classification	ROADS_ALL.shp (SANDAG, 2018)
Land Uses	Pedestrian Priority Attractor Model and existing adjacent land uses and intensities	PPM (City of San Diego 2015) and LANDUSE_CURRENT.shp (SANDAG, 2018)

Source: City of San Diego Pedestrian Master Plan Volume 1, Appendix B (2015)

[3] https://www.sandiego.gov/sites/default/files/legacy/planning/programs/transportation/mobility/pdf/sdpmp_volume_1_appendix_b.pdf

Figure 2-2 City of San Diego Pedestrian Route Typologies

ROUTE TYPE:	1. District Sidewalks	2. Corridor Sidewalks	3. Connector Sidewalks	4. Neighborhood Sidewalks	5. Ancillary Pedestrian Facilities	6. Path	7. Trail (Included for Reference Only, not a Focus of this Plan)
Purpose	Sidewalks Along Roads that Support Heavy Pedestrian Levels in Mixed-use Concentrated Urban Areas	Sidewalks Along Roads that Support Moderate Density Business & Shopping Districts with Moderate Pedestrian Levels	Sidewalks Along Roads that Support Institutional, Industrial or Business Complexes with Limited Lateral Access & Low Pedestrian Levels	Sidewalks Along Roads that Support Low to Moderate Density Housing with Low to Moderate Pedestrian Levels	Facilities Away or Crossing Over Streets such as Plazas, Paseos, Promenades, Courtyards or Pedestrian Bridges & Stairways	Walkways and Paved Paths that are not Adjacent to Roads that Support Recreational and Transportation Purposes	Unpaved Walk Not Adjacent to Roads Used for Recreational Purposes
Typical Adjacent "Street Design Manual" Classifications	All types of adjacent streets are possible	Commercial, Urban Collector, Urban Major & Arterial	Commercial, Industrial, Urban Major, Rural Collector & Arterial	Rural, Low Volume Residential, Residential Local & Sub-collector	Not associated with a street	Not associated with a street	Not associated with a street
Cross Reference to Related "Strategic Framework Plan" Definitions	Existing: Regional Centers, Urban Villages & Neighborhood Villages	Existing: Sub-regional Districts and Transit Corridors	Existing: Sub-regional Districts, Transit Corridors, & Suburban Residential along Major Arterials	All other Residential Areas not Classified under the Strategic Framework Plan	Most common in Regional Centers, Urban or Neighborhood Villages but can be in any area	Can occur in any area, but most often found in Recreation, Tourist or Open Space Areas	Can occur in any area, but most often found in Recreation or Open Space Areas
Typical Adjacent Land Uses	Mixed-use Housing, Commercial, Office & Entertainment with Urban Densities	Multiple Land Uses but may be Separated. Often Strip Commercial or Office Complex.	Open Space, Industrial Uses, Institutional Uses or other Pedestrian Restricted Uses	Single-family and Moderate Density Multi-Family with Limited Supporting Neighborhood Commercial	Adjacent Land Uses Vary	Adjacent Uses Vary, Often Recreational or Open Space or Housing	Open Space, Parks and Natural Areas

Source: City of San Diego Pedestrian Master Plan – City-Wide Implementation Framework Report (2006), Table 26

A summary of the existing typology in the Project Study Area is included in **Section 4.1.1**.

Pedestrian Safety

To understand existing pedestrian safety issues, a safety assessment was performed using collision data obtained from the San Diego Police Department's Crossroads software (SDPD) for the period from October 2012 through September 2017. Collisions from SDPD were geocoded and mapped to display the locations of collisions within the Mira Mesa community.

The location and concentration of pedestrian-involved collisions was taken into consideration when developing the pedestrian study area, as locations with two or more collisions between 2012 and 2017 were included in the pedestrian quality and connectivity assessments.

Several tables were also created to further understand safety issues and trends within the community, including

1. Most frequent pedestrian collision locations,
2. Primary cause of collisions
3. Pedestrian collisions by party at fault, and
4. Pedestrian collisions by location types.

The collision location types were identified as intersection, midblock, or approaching/departing intersection.

- Collisions that occurred within 100 feet of the center of the intersection were identified as intersection collisions to account for vehicles that are queued at the intersection.
- Collisions that occurred between 100 feet and 350 feet from the center of the intersection were identified as approaching/departing collisions. This net 250 feet is reflective of the stopping sight distance of a vehicle travelling at 35 mph.
- Collisions that occurred at a distance over 350 feet away from the center of the intersection were identified as mid-block collisions.

A map showing the spatial distribution of pedestrian-involved collisions in the Project Study Area and results of the pedestrian safety analysis are summarized in **Section 4.1.2**. For presentation purposes, the intersection and approaching/departing intersection collisions were grouped together. Any collision within 350 feet of the center of the intersection were considered intersection-related. Mid-block locations were then evaluated on a case-by-case basis and bundled if they occurred within close proximity of each other, with similar roadway characteristics, and collision trends. Locations that were grouped together were reviewed and approved by the City.

Pedestrian Facility Quality

The quality of all existing pedestrian facilities (roadway segments, intersection crossings, and mid-block crossings) within the pedestrian study area were evaluated using the Pedestrian Environment Quality Evaluation (PEQE) tool criteria described in **Table 2-3.** The PEQE methodology used by the City was derived from the Pedestrian Environmental Quality Index (PEQI) assessment developed by the San Francisco Department of Public Health[4]. The evaluation yields High-, Medium-, or Low-Quality designations for each facility based upon the following scoring system:

Low-Quality: < 4 points
Medium-Quality: = 4 – 6 points
High-Quality: > 6 points

The results of the existing PEQE analysis for facilities within the pedestrian study area are included in **Section 4.1.3**. A detailed table summarizing the PEQE inputs is included in **Appendix B**.

[4] *Pedestrian Environmental Quality Index, San Francisco Department of Public Health (2012)*

Table 2-3 PEQE Scoring Criteria

Facility Type	Measure	Description/Feature	Scoring
Segment between two intersections	Horizontal Buffer	Between the edge of auto travel way and the clear pedestrian zone	0 point: < 6 feet 1 point: 6 - 14 feet 2 points: > 14 feet
	Lighting	Standard requirement = 150-300'	0 point: below standard/requirement 1 point: meet standard/requirement 2 points: exceed standard/requirement
	Clear Pedestrian Zone	5' minimum	0 point: has obstructions 2 points: no obstruction
	Posted Speed Limit		0 point: > 40 mph 1 point: 30 - 40 mph 2 points: < 30 mph
Maximum			**8 points**
Intersection – Individual Crossing	Physical Feature	Enhanced/High Visibility Crosswalk Raised Crosswalk/Speed Table Advanced Stop Bar Bulb out/Curb Extension	0 point: < 1 feature per ped crossing 1 point: 1 – 2 features per ped crossing 2 points: > 2 features per ped crossing
	Operational Feature	Pedestrian Countdown Signal Pedestrian Lead Interval No-Turn On Red Sign/Signal Additional Pedestrian Signage	0 point: < 1 feature per ped crossing 1 point: 1 – 2 features per ped crossing 2 points: > 2 features per ped crossing
	ADA Curb Ramp		0 point: no existing curb ramp 1 point: existing curb ramp is below standard/requirement 2 points: curb ramp meets standard/requirement
	Traffic Control		0 point: No control 1 point: Stop sign controlled 2 points: Signal/ Roundabout/Traffic Circle
Maximum			**8 points**
Mid-block Crossing	Visibility		0 point: w/o high visibility crosswalk 2 points: with high visibility crosswalk
	Crossing Distance		0 point: no treatment 2 points: with bulb out or median pedestrian refuge
	ADA		0 point: no existing curb ramp 1 point: existing curb ramp is below standard/requirement 2 points: curb ramp meets standard/requirement
	Traffic Control		0 point: No control 1 point: Pedestrian Activated Warning Device (In-pavement, Pedestrian Activated Flashing Beacons etc.) 2 points: Signal/Pedestrian Hybrid Beacon (HAWK)
Maximum			**8 points**

Source: DRAFT Active Travel Assessments: Integrating Bicycle, Pedestrian and Transit Evaluation in Long Range Planning White Paper (City of San Diego, 2017)

Pedestrian Network Connectivity

PEDESTRIAN NETWORK INVENTORY

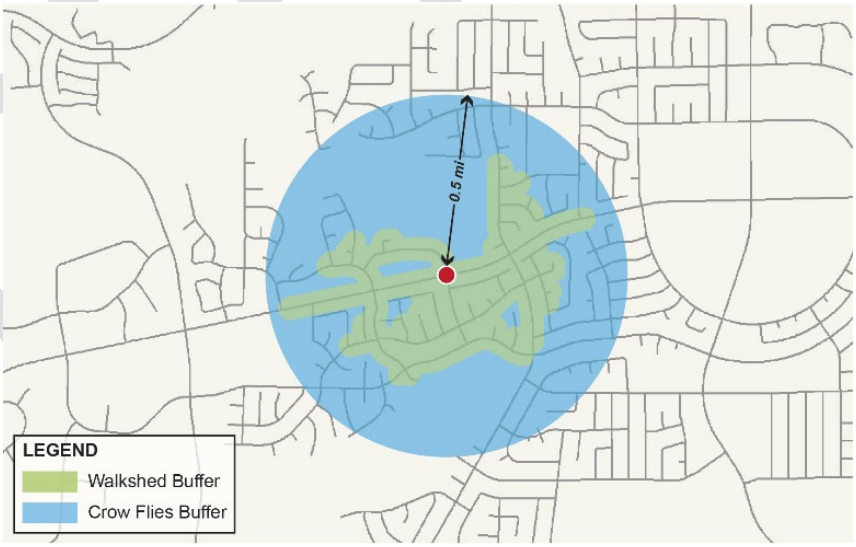
A 2015 existing sidewalk inventory of the study area was provided by City staff in Geographic Information System (GIS) format for review and analysis in the ArcGIS software. This data was used for review and analysis in the ArcGIS software to provide an overview of where pedestrian connections are currently provided, areas that have missing pedestrian facilities, and barriers that may impede pedestrian connectivity. Missing sidewalks were identified to show existing gaps. Asphalt sidewalks were also identified through field or aerial imagery review to identify where sidewalks exist but may not be to City standard.

As a separate effort, pedestrian barriers were identified to understand community-specific environments. Barriers are intended to identify locations where connections may be feasible but will be limited. These include freeways, rail tracks, canyons, mountains/hills, water bodies, and other unique features. The current inventory with missing facilities within the pedestrian study area are included in **Section 4.1.3**.

WALKSHED ANALYSIS

Pedestrian network connectivity was evaluated utilizing a walkshed ratio for study intersections within the pedestrian study area. The Walkshed Ratio was calculated by comparing the land area accessible within a ½-mile pedestrian network buffer to the land areas accessible within a ½-mile "as-the-crow-flies" buffer. A higher Walkshed Ratio represents better overall connectivity at a particular intersection[5]. The Walkshed Ratio utilizes the following formula:

$$\frac{\text{Land Area Accessible within a 0.5 mile walkshed (acres)}}{\text{Land Area Accessible within a 0.5 mile "crow flies" buffer (acres)}}$$



[5] *65% is typically the highest Walkshed Ratio that can be achieved in even the most ideal communities (i.e. urban downtown settings with tight grid networks). Therefore, any community with a connectivity ratio over 50% may be considered ideal from a pedestrian network standpoint..*

The only private roads included as part of the network for this analysis were Miramar College sidewalks. The ArcGIS Network Analyst tool was used to calculate the walkshed ratio, relying on the network inventory provided by the City with modifications made for asphalt sidewalks or private connections where applicable. The quality of the pedestrian facility was also not considered, as that is addressed in the PEQE evaluation. An overview of the existing Walkshed Ratio analysis for the Mira Mesa community is provided in **Section 4.1.4**.

2.2 BICYCLE

Bicycle Study Area

The Bicycle Study Area is equivalent to the pedestrian study area. Locations identified by the City of San Diego's Bicycle Demand Model (BDM) and where multiple bicycle-related collisions occurred from 2012-2017 required additional focus. However, the entire project study area was evaluated for at least one of the four performance measures: demand, safety, quality, connectivity.

Bicycle Demand

Bicycle demand was evaluated using three different sources and methodologies:

1. Bicycle Count Data
2. City of San Diego's Bicycle Demand Model
3. US Census Survey Information

BICYCLE COUNT DATA

Existing bicycle demand was determined using intersection turning movement counts conducted for the vehicular analysis portion of this project. Vehicles, pedestrians, and bicycles were counted at 92 intersections during the AM and PM peak periods. A summary of bicycle peak hour volumes is provided in **Section 4.2.1**.

CITY OF SAN DIEGO BICYCLE DEMAND MODEL (BDM)

The City of San Diego's BDM was used to evaluate facilities with high cycling demand or locations warranting relatively higher considerations for bicycle infrastructure improvements within the Mira Mesa community.

The BDM analyzes two components of demand: intra-community travel and inter-community travel. The intra-community demand submodel is based on population characteristics combined with bicycle trip attractors and generators within the community. The inter-community demand submodel focuses on higher intensity areas and their proximity to land uses typically associated with higher rates of cycling activity. A summary of land uses and other amenities in each category is shown below in **Table 2-4**.

Table 2-4 Bicycle Demand Factors

Category	Bicycle Demand Factors
Attractors	Schools, Universities, Neighborhood Civic Facilities, Neighborhood and Community Retail, Parks and Recreation Facilities, Proximity to and Ridership at Transit Stops/Stations
Generators	Population and Employment Density, Age, Income, Disability Density, Mixed Land Density

Source: City of San Diego (2017)

Using the BDM, high bicycling demand roadway segments were identified and are described in more detail in **Section 4.2.1**. This provides information on where bicycling is attractive based on land uses and helps facilitate where future investments in bicycle facilities may be most desirable.

US CENSUS SURVEY DATA

In addition to the BDM assessment of bicycle demand, the American Community Survey[1] (ACS) 5-year estimates commuting data (2012-2016) was utilized to understand the existing commute mode share by bike for the community. The ACS commuting data provides information about the means of transportation to work by employees 16 years and older for each census block group[2]. The means of transportation to work represents the commute mode within the community.

The ACS commuting data was filtered to the census block groups within the Mira Mesa community boundary. The "bicycle commute mode share" was then calculated as a percent of the total mode share. This was accomplished by taking the number of employees in Mira Mesa who bike to work, divided by the total number of employees for each block group in the community, and multiplying it by 100 to develop a percent as shown below:

$$\text{Bicycle Commute Mode Share} = \left(\frac{\text{Total number of employees who bike to work}}{\text{Total number of employees within each block group}}\right) \times 100$$

The "bicycle commute mode share" was compared to City and County of San Diego average bicycle mode share percentages.

Bicycle Safety

To understand existing bicycle safety issues, a safety assessment was performed using collision data from October 2012 to September 2017 obtained from the San Diego Police Department's Crossroads software (SDPD) provided by City staff. Collisions from SDPD were geocoded and mapped to display the locations of bicycle-related collisions within the Mira Mesa community.

Several tables were created to further understand safety issues and trends within the community, including:

1. Most frequent bicycle collision locations,
2. Primary bicycle collision causes,
3. Bicycle collisions by party at fault, and
4. Bicycle collisions by location types.

Similar to the evaluation for pedestrians, bicycle-related collision location types are identified as intersection, midblock, or approaching/departing intersection.

- Collisions that occurred within 100 feet of the center of the intersection were identified as intersection collisions to account for vehicles that are queued at the intersection.
- Collisions that occurred between 100 feet and 350 feet from the center of the intersection were identified as approaching/departing collisions. This net 250 feet is reflective of the stopping sight distance of a vehicle travelling at 35 mph.
- Collisions that occurred at a distance over 350 feet away from the center of the intersection were identified as mid-block collisions.

A map showing the spatial distribution of bicycle-involved collisions was created. For presentation purposes, the intersection and approaching/departing intersection collisions were grouped together. Any collision with 350 feet of the center of the intersection were considered intersection-related. Mid-block locations were then evaluated on a case-by-case basis, and bundled if they occurred within close proximity of each other with similar roadway characteristics and collision trends. Locations that were grouped together were reviewed and approved by the City. The results of the bicycle safety analysis are summarized in **Section 4.2.2**.

Bicycle Facility Quality

The Mineta Transportation Institute published a Low-Stress Bicycling and Network Connectivity analysis [6], which establishes a methodology for evaluating the level of traffic stress for bicyclists riding on a designated bicycle facility based on specific factors for roadway segments and intersection approaches. The Mineta Transportation Institute document used the City of San Jose as a test case for applying this methodology. This methodology designates a level of traffic stress (LTS) for roadways and intersections on a scale of LTS 1 (lowest stress) to LTS 4 (highest stress):

- **LTS 1** facilities present little traffic stress and demand little attention from cyclists. They are suitable for almost all cyclists and attractive enough for a relaxing bike ride.
- **LTS 2** facilities are suitable to most adult cyclists but demand more attention than might be expected from children.
- **LTS 3** starts to introduce a stress level that not all adult cyclists feel comfortable with.
- **LTS 4** is the highest level of stress and may be used by experienced bicyclists or not used at all.

[6] *"Low Stress Bicycling and Network Connectivity", Mineta Transportation Institute, p. 18*

The following criteria are used to establish the LTS ranking:

- Roadway Classifications
- Roadway Speeds (posted, or prevailing if available)
- Bicycle Facility Type
- Bike Lane and Buffer Widths
- Intersection Control
- Bike Lane configuration at Intersections
- Parking Lane width
- Existing Transit Routes

Per the methodology guidance, both directions of a roadway segment are independently assigned a score between LTS 1 and LTS 4 based on several criteria shown in **Table 2-5** through **Table 2-7** , while an intersection approach can be assigned a separate score based on criteria shown in **Table 2-8** through **Table 2-11**. Where a table cell shows a result of "(no effect)", the resulting LTS for that situation is equal to the lower adjacent LTS. The level of traffic stress assigned to a location reflects the worst score of applicable criteria. For example, if a segment street width matches criteria for LTS>1, its prevailing speed matches LTS>2, and its bike lane blockage matches LTS 3, then the segment as whole has LTS 3.

Data on roadway classifications, speeds, bicycle facility type, and intersection control were compiled using field observations of roadway segments and intersections for classified roadways in the Mira Mesa community. This information was supplemented with measurement estimates and documentation of bike lane configurations at intersections taken from aerial imagery and was field-verified.

The results of the existing BLTS score analysis are included in **Section 4.2.3**. A more detailed table summarizing the BLTS inputs for each segment and intersection are included in **Appendix C**.

Table 2-5 Criteria for Bike Lanes Alongside a Parking Lane

	LTS ≥ 1	LTS ≥ 2	LTS ≥ 3	LTS ≥ 4
Street Width** (through lanes per direction)	1	(no effect)	2 or more	(no effect)
Sum of bike lane and parking lane width	15 ft. or more	14 or 14.5 ft.*	13.5 ft or less	(no effect)
Speed Limit or prevailing speed	25 mph or less	30 mph	35 mph	40 mph
Bike Lane Blockage	Rare	(no effect)	Frequent	(no effect)

Note: (no effect) =factor does not trigger an increase to this level of traffic stress.
* If speed limit < 25 mph or Class= residential, then any width is acceptable for LTS 2.

Table 2-6 Criteria for Bike Lanes Not Alongside a Parking Lane

	LTS ≥ 1	LTS ≥ 2	LTS ≥ 3	LTS ≥ 4
Street Width (through lanes per direction)	1	2, if separated by a raised median	More than 2 or 2 without a separating median	(no effect)
Bike Lane width (includes marked buffer and paved gutter)	6 ft. or more	5.5 ft or less	(no effect)	(no effect)
Speed Limit or prevailing speed	30 mph or less	(no effect)	35 mph	40 mph or more
Bike Lane Blockage	Rare	(no effect)	Frequent	(no effect)

Note: (no effect) =factor does not trigger an increase to this level of traffic stress.

Table 2-7 Criteria for Level of Traffic Stress in Mixed Traffic

Speed Limits	Street Width		
	2-3 Lanes	4-5 Lanes	6+ Lanes
Up to 25 mph	LTS 1* or 2*	LTS 3	LTS 4
30 mph	LTS 2* or 3*	LTS 4	LTS 4
35+ mph	LTS 4	LTS 4	LTS 4

Note: *Use lower value for streets without marked centerlines or classified as residential and with fewer than 3 lanes; use higher values otherwise.

Table 2-8 Level of Traffic Stress Criteria for Pocket Bike Lanes

Configuration	Level of Traffic Stress
Single right-turn lane up to 150 ft. long, starting abruptly while the bike lane continues straight, and having intersection angle and curb radius such that turning speed ≤ 15 mph.	LTS ≥ 2
Single right-turn lane up to 150 ft. long, starting abruptly while the bike lane continues straight, and having intersection angle and curb radius such that turning speed ≤ 20 mph.	LTS ≥ 3
Single right-turn lane in which the bike lane shifts to the left but the intersection angle and curb radius are such that turning speed is ≤ 15 mph.	LTS ≥ 3
Single right-turn lane with any other configuration; dual right-turn lanes; or right-turn lane along with an option (through-right) lane.	LTS ≥ 4

Table 2-9 Level of Traffic Stress Criteria for Mixed Traffic in the Presence of a Right-turn Lane

Configuration	Level of Traffic Stress
Single right-turn lane with length ≤ 75 ft. and intersection angle and curb radius limit turning speed to 15 mph.	(No effect on LTS)
Single right-turn lane with length between 75 ft. and 150 ft., and intersection angle and curb radius limit turning speed to 15 mph.	LTS ≥ 3
Otherwise	LTS = 4

Table 2-10 Level of Traffic Stress Criteria for Unsignalized Crossings Without a Median Refuge

Speed Limit of Street Being Crossed	Width of Street Being Crossed		
	Up to 3 lanes	4-5 lanes	6+ lanes
Up to 25 mph	LTS 1	LTS 2	LTS 4
30 mph	LTS 1	LTS 2	LTS 4
35 mph	LTS 2	LTS 3	LTS 4
40 mph	LTS 3	LTS 4	LTS 4

Table 2-11 Level of Traffic Stress Criteria for Unsignalized Crossings with a Median Refuge Six Feet Wide

Speed Limit of Street Being Crossed	Width of Street Being Crossed		
	Up to 3 lanes	4-5 lanes	6+ lanes
Up to 25 mph	LTS 1	LTS 1	LTS 2
30 mph	LTS 1	LTS 2	LTS 3
35 mph	LTS 2	LTS 3	LTS 4
40 mph	LTS 3	LTS 4	LTS 4

Bicycle Network Connectivity

A bicycle connectivity analysis is used to measure the accessibility of a bicycle network to the community. Bicycle connectivity is measured in two ways, both using the ArcGIS Network Analyst tool:

1) Bikeshed Ratio, and
2) Low-Stress Bicycle Facility Connectivity

BIKESHED RATIO

The Bikeshed Ratio measures overall bicycle connectivity from any given point, by comparing the area accessible via the bicycle network within a given travel distance (the "bikeshed") to the area of an "as-the-crow-flies" radius covering the same travel distance:

$$\frac{\text{Area accessible via the bicycle network by traveling distance X}}{\text{Area accessible via "crow flies" traveling distance X}}$$

A higher Bikeshed Ratio at a given point indicates that the network provides better overall bicycle connectivity from that location.[7]

This analysis examined 135 points at study area intersections to create a comprehensive picture of the community bicycle connectivity. The analysis focused specifically on the area reachable between 0.25 miles and 1.0 mile from each point. The inner area within 0.25 miles from each point was removed from the assessment, as it is assumed to be utilized by pedestrian trips.

The ArcGIS Network Analyst tool conducted the core analysis using the Service Area function, by generating a doughnut-shaped (0.25-1.0 mile) "service area" for each point that is reachable via the bicycle network. Dividing that land area by the land area of a 0.25-1.0 "as-the-crow-flies" doughnut (1,884.95 acres) yields the Bikeshed Ratio for each point.

An overview of the existing Bikeshed Ratio analysis is provided in **Section 4.2.4**.

LOW-STRESS BICYCLE CONNECTIVITY

The Low-Stress Bicycle Connectivity analysis evaluates each Traffic Analysis Zone's (TAZ's) connectivity to the rest of the community via low-stress routes, characterized as LTS 1 or 2. The analysis assigns each TAZ a connectivity score based on the following ratio:

$$\frac{\text{Number of TAZs accessible via low-stress routes (LTS 1 or 2 only)}}{\text{Number of TAZs accessible via all routes}}$$

[7] *Due to the presence of natural features and other constraints, 65% is typically the highest Bikeshed Ratio that can be achieved in even the most ideal communities. In general, any score over 50% is considered ideal from a bicycle standpoint.*

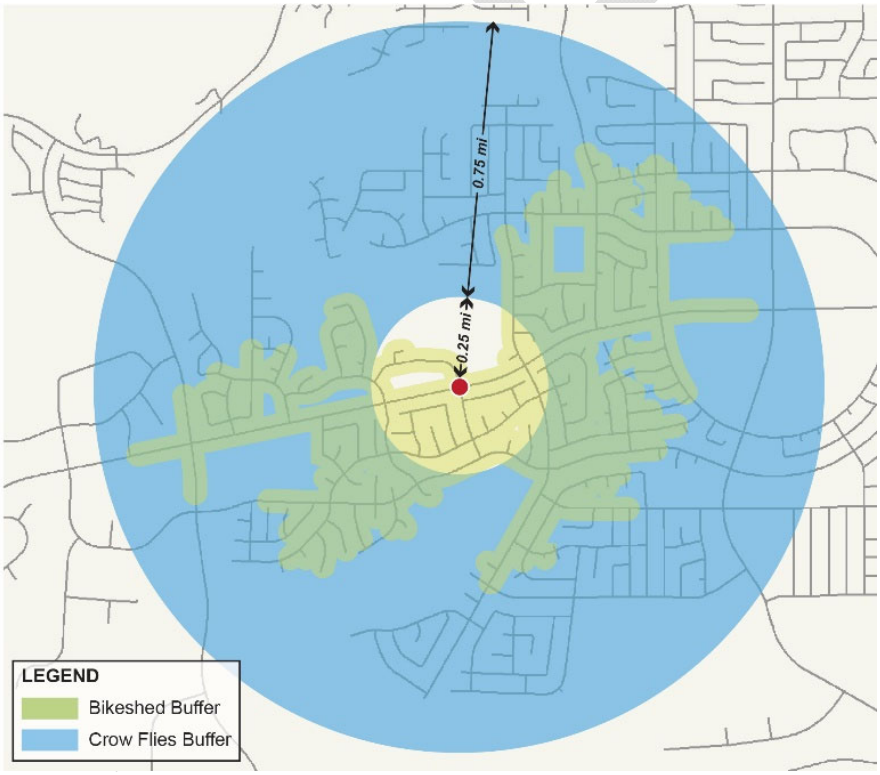
The ratio is developed using the following steps:

1. Assess the number of TAZs accessible via a bicycle network of low-stress routes only (classified as LTS 1 or 2), with LTS 3 and 4 routes removed as potential pathways and acting as barriers to crossing. The resulting number of TAZs represents the numerator of the above ratio.

2. Use the Closest Facility function of the ArcGIS Network Analyst tool to develop an unconstrained network of shortest paths to/from the centroids of all TAZs. Paths less than ¼ mile removed since they would likely be made by foot.

3. Assess the number of TAZs accessible by the entire unconstrained bicycle network with potential routes developed in the previous step. The resulting number of TAZs represents the denominator of the above ratio.

The ratio is calculated for each TAZ and reflects the percent of all other TAZs that are reachable along LTS 1 or 2 paths. The analysis results in each TAZ being assigned a percentage reflecting its level of connectivity to other TAZs in the community.



2.3 TRANSIT

Transit Demand

Transit demand is affected by both current ridership and potential ridership, as one of the primary factors that determines transit ridership is the proximity of stations to population and employment. Existing and potential transit demand was evaluated using three different sources and methodologies:

1. MTS Route Ridership Data (Existing Demand)
2. US Census Survey Commute Mode Share Data (Existing Demand)
3. US Census Survey Population Density Data (Potential Demand)
4. LODES Employment Density Data (Potential Demand)

MTS ROUTE RIDERSHIP DATA

Current transit demand was evaluated by obtaining boarding (riders getting on) and alighting (riders getting off) ridership information for all stations/stops within Mira Mesa from MTS (Spring 2017 data). The information was used to determine the following:

- Number of boardings and alightings by stop
- Ridership by route
- Locations with the highest boardings
- Locations with the highest alightings

US CENSUS SURVEY COMMUTE MODE SHARE DATA

The American Community Survey (ACS)[1] 5-year estimates commuting data (2012-2016) was utilized to understand the existing commute mode share by public transportation for the community. The ACS commuting data provides information about the means of transportation to work by employees 16 years and older for each census block group[2]. The means of transportation to work represents the commute mode within the community.

The ACS commuting data was filtered to the census block groups within the Mira Mesa community boundary. The "transit commute mode share" was then calculated as a percent of the total mode share. This was accomplished by taking the number of employees who take transit to work (B08301e10), divided by the total number of employees (B08301e1) for each block group, and multiplying it by 100 to develop a percent as shown below:

$$\text{Transit Commute Mode Share} = \left(\frac{\text{Total number of employees who take transit to work}}{\text{Total number of employees within each block group}}\right) \times 100$$

The "transit commute mode share" was compared to City and County of San Diego average pedestrian mode share percentages.

A summary of existing transit demand is provided in **Section 4.3.1**.

US CENSUS SURVEY POPULATION DENSITY DATA

The American Community Survey (ACS) 5-year estimate population data (2012-2016) was utilized to represent where people live. ACS provides population and demographic information for each census block group[3]. The ACS population data represents people living within census block group. The ACS population data was filtered to the census block groups within the Mira Mesa community boundary. Then, the population for each census block in Mira Mesa was divided by the area of the census block group in square miles to develop a population density.

To determine the relative level of potential transit ridership within the community, a set of pedestrian walksheds of 0.25-mile was generated from all transit stops. Each walkshed was then overlaid on top of the population data to determine the number of dwelling units that exist within walking distance from each transit stop.

A summary of population within walking distance of each transit stop is included in **Section 4.3.1**.

LODES EMPLOYMENT DENSITY DATA

Origin-Destination Employment Statistics (LODES)[8] data was utilized to represent where people work. within a census block level[9]. The data was filtered to the census blocks within the Mira Mesa community boundary. Then, the number of people working in each census block in Mira Mesa was divided by the area of the census block in square miles to develop an employment density.

A set of pedestrian walksheds of 0.25-mile was generated from all transit stops to determine the relative level of potential transit ridership within the community. Each walkshed was then overlaid on top of the employment data to determine the number of jobs that exist within walking distance from each transit stop.

A summary of employment within walking distance of each transit stop is included in **Section 4.3.1**.

Safety Near Transit Stop/Station

To understand existing pedestrian and bicycle safety issues near transit stations/stops, a safety assessment was performed using collision data obtained from the San Diego Police Department's Crossroads software (SDPD) for the period from October 2012 through September 2017. Collisions from SDPD were geocoded and mapped to display the locations of collisions within the Mira Mesa community.

A 500-foot buffer around transit stations within the community was applied to select the relevant bicycle- and pedestrian-involved collisions. A map showing the spatial distribution of combined pedestrian- and bicycle-involved collisions near a transit stop or station is also included in **Section 4.3.2**.

[8] LODES data is provided by Longitudinal Employer-Household Dynamics (LEHD). LEHD leverages existing data such as censuses, surveys, and administrative records to create new data products. The data files are state-based and organized into three types: Origin-Destination (OD), Residence Area Characteristics (RAC), and Workplace Area Chatacteristics (WAC), all at census block geographic level.

[9] A census block is the smallest geographic unit used by the US Census Bureau. Census blocks are grouped into block groups, which are grouped into census tracts.

Transit Quality

The quality of the transit system in Mira Mesa was evaluated based on the transit stations and stops throughout the community, as well as the speed of the corridors on which the transit facilities are located.

TRANSIT STATION/STOP QUALITY

Transit stations and stops were reviewed to identify the presence or absence of the following amenities:

- Shelters
- Benches
- Trash Receptacles
- Station Signs
- Maps/Wayfinding
- Lighting
- ADA compliance

The San Diego MTS designates minimum amenity standards for transit stops based on the average number of daily boardings that occur at each stop per the *MTS Design for Transit* manual.

Table 2-12 outlines the standard amenities that should be provided at transit stations/stops based on the daily passenger boardings (across all routes), according to MTS bus stop features guidelines[10].

Table 2-12 Transit Amenity Standards by Ridership Levels

Amenity	Daily Passenger Boardings by Station/Stop				
	< 50	50 -100	101 -200	201 – 500	> 500
Sign and Pole	X	X	X	X	
Built-in Sign					X
Expanded Sidewalk			X	X	X
Bench		X	X	X	X
Shelter			X	X	X
Route Designations	X	X	X	X	X
Time Table				X	X
Route Map			X	X	X
System Map					X
Trash Receptacle				X	X
Lighting			X	X	X
ADA Compliant	X	X	X	X	X

Source: Designing for Transit, MTS (1993)

A summary of ridership and amenities for all stations/stops in the Mira Mesa study area are reported in **Section 4.3.3**.

[10] *Designing for Transit: A Manual for Integrating Public Transportation and Land Development in the San Diego Metropolitan Area*. San Diego Metropolitan Transit Development Board (MTDB). 1993.

TRANSIT CORRIDOR QUALITY

On-time bus performance can be directly affected by vehicular traffic congestion along roadways serving bus routes. Travel times along certain corridors in the community were calculated using methodologies described in the vehicle section of this chapter. Any routes that utilize the corridors included in the evaluation are discussed for quality of service as it relates to speed. Further information on the travel time and speed is provided in the vehicle section of this chapter.

This information is presented in **Section 4.3.3**.

Transit Network Connectivity

The latent demand evaluation described under "Transit Demand" indicates the number of potential transit users (residents and employees) within the vicinity of each major transit stop in the community, using a 0.25-mile pedestrian network walkshed and a 0.75-mile bicycle network bikeshed.

The quality connections assessment draws from the quality walking analysis and quality bicycling analysis results (using only "high and medium" quality networks based on the bicycle and pedestrian analysis) to identify quality 0.25-mile pedestrian and 0.75-mile bicycle networks surrounding major transit stations/stops. These distances were defined and based upon information in the San Diego Forward: The Regional Plan, Appendix U4 – SANDAG Regional Transit Oriented Development Strategy, and represent a five-minute travel distance for pedestrians and cyclists.

A Quality Walk Ratio and a Quality Bicycle Ratio were then developed for each major transit station/stop and presented on a map using the following equations:

$$\text{Quality Walk Ratio from Transit} = \frac{\text{Quality Walking Distance from Transit}}{\text{Crow Flies Buffer from Transit}}$$

$$\text{Quality Bike Ratio from Transit} = \frac{\text{Quality Bike Distance from Transit}}{\text{Crow Flies Buffer from Transit}}$$

The resulting Quality Walk Ratio from Transit and Quality Bicycle Ratio from Transit are presented in **Section 4.3.4**.

2.4 VEHICLE

Vehicular Study Area

The vehicular study area encompasses the Mira Mesa Community Planning Area and one segment and intersection beyond the community boundary, in order to capture potential transportation impacts to the adjacent communities associated with the Mira Mesa Community Plan Update. **Figure 2-2** displays the vehicle study area and location of study intersections.

ROADWAY SEGMENTS AND CORRIDORS

Roadway segments were selected based on the following factors:

- Existing Circulation Element roadways functioning or classified as a collector or higher
- Anticipated Circulation Element roadways functioning or classified as a collector or higher
- Roadways providing access to/from freeways

All above roadways with the Mira Mesa community boundary, and approximately one segment beyond the community planning area were evaluated for a total of 195 roadway segments.

INTERSECTIONS

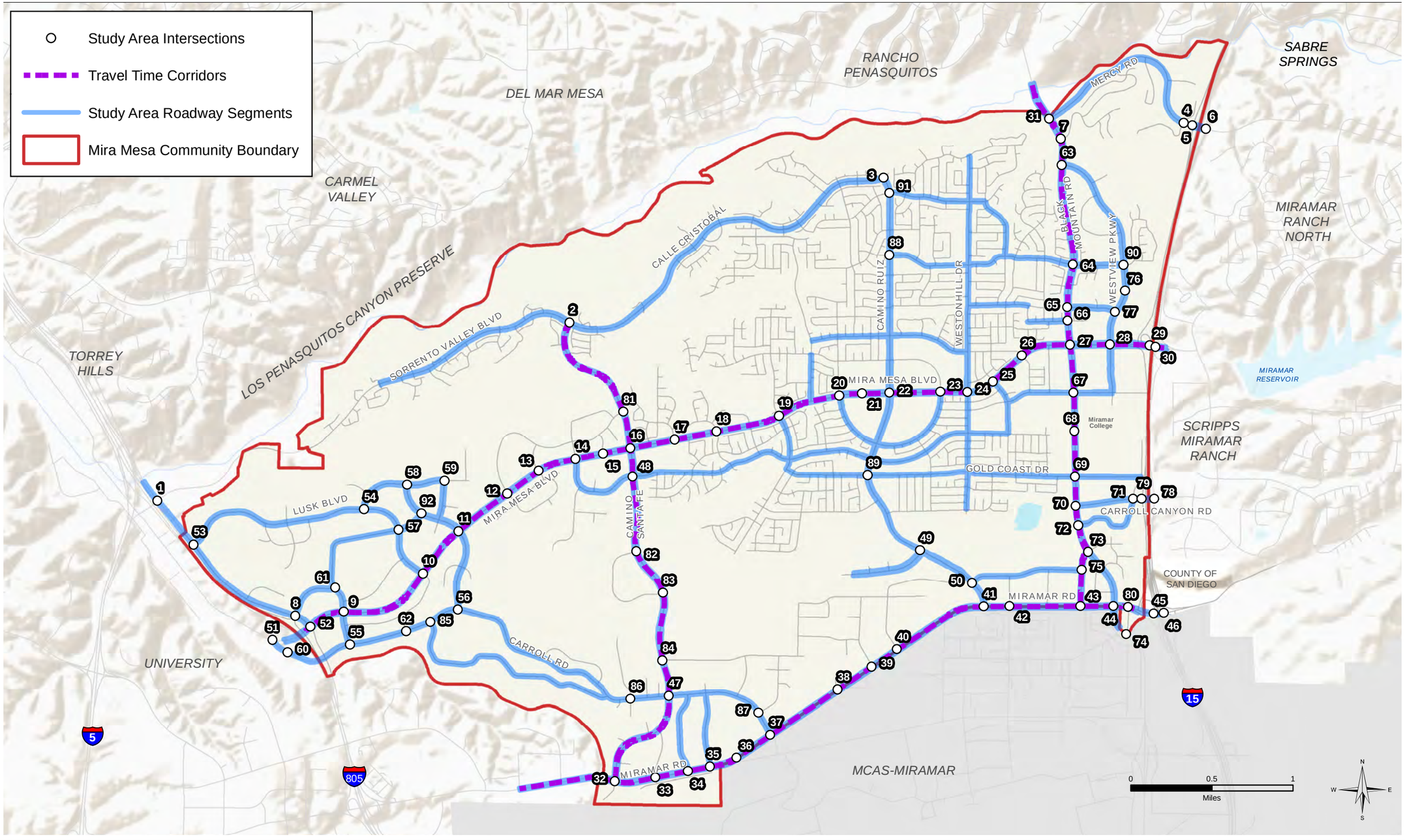
Intersections were selected based on the following factors:

- Existing and anticipated Circulation Element roadways intersecting with other existing and/or anticipated Circulation Element roadways where both roadways function or are classified as a collector or higher, where both intersecting streets meet one of the following conditions:
    - Four or more lanes;
    - 3-lane roadways carrying more than 15,000 ADT; or
    - 2-lane roadways carrying more than 10,000 ADT.
- Intersections that provide access to/from freeways located within the community
- Signalized intersections along corridors where travel time analysis is performed

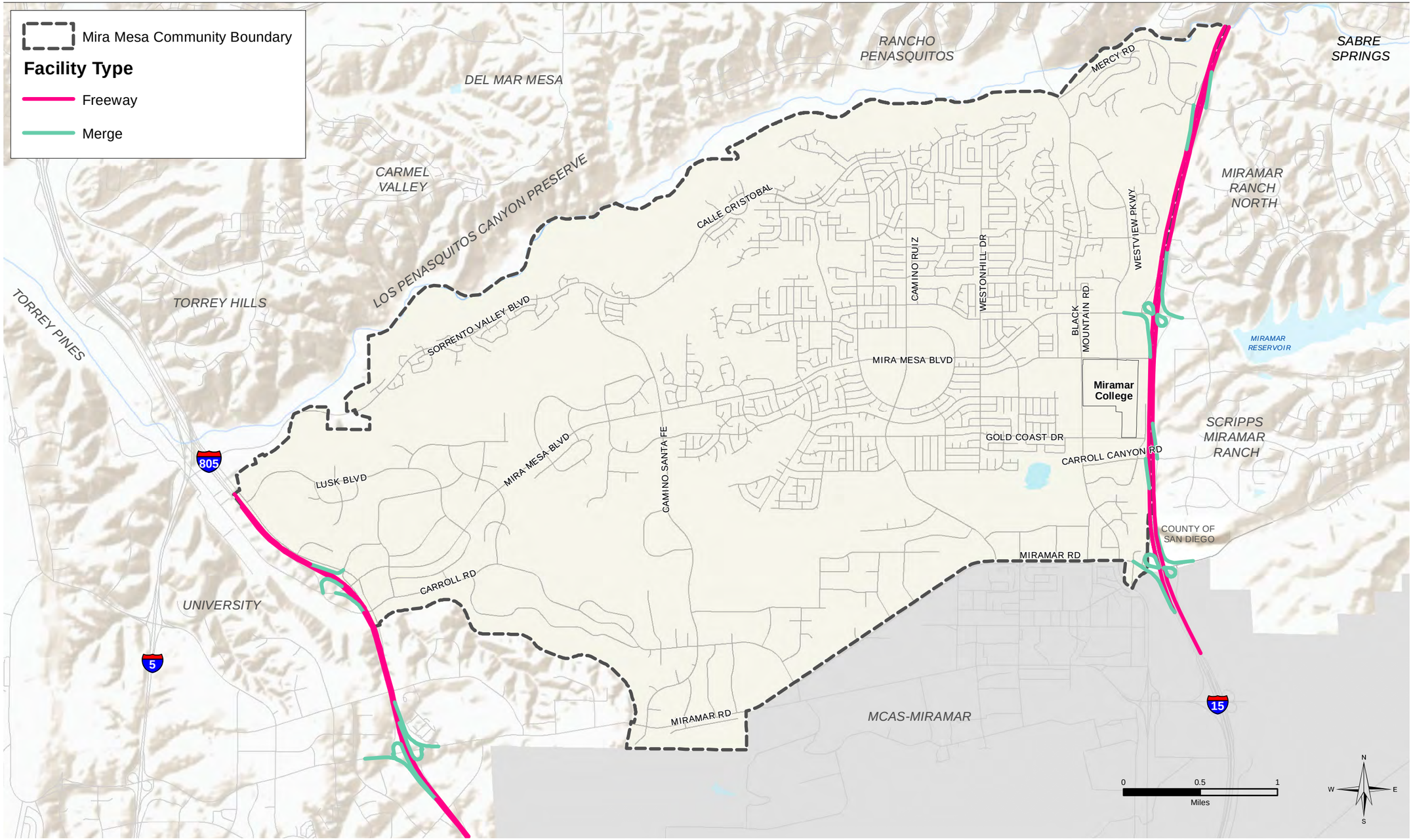
Using these criteria, a total of 92 intersections were included.

FREEWAY SEGMENTS AND RAMPS

Freeway segments adjacent to the community and freeway entrance ramps that are controlled by ramp meters are included in the study area. Figure 2-4 graphically displays the location of each of the freeway segments and entrance ramps included in the analysis study area. This includes facilities along I-15 on the east side of the community, and I-805 on the west side of the community.



Vehicular Analysis Study Area



Freeway Analysis Study Area

Vehicular Demand

Existing demand was determined using a combination of data obtained, including:

- Intersection turning movement counts at study intersections during peak hours,
- Daily roadway volumes on study roadways
- Caltrans-published peak-hour and daily volumes for study area freeway facilities.

Vehicular Safety

To further understand existing safety issues, a safety assessment was performed using collision data from October 2012 to September 2017 obtained from the San Diego Police Department's Crossroads software (SDPD). All collisions from SDPD were geocoded and mapped to display the locations of collisions within the Mira Mesa community.

Several tables were created to further understand safety issues and trends within the community, including:

1. High-frequency collision locations,
2. Fatal collision locations,
3. Collision Types, and
4. Primary Cause.

Similar to the evaluation for pedestrians and bicycles, collision location types were identified as intersection, midblock, or approaching/departing intersection.

- Collisions that occurred within 100 feet of the center of the intersection were identified as intersection collisions to account for vehicles that are queued at the intersection.
- Collisions that occurred between 100 feet and 350 feet from the center of the intersection were identified as approaching/departing collisions. This net 250 feet is reflective of the stopping sight distance of a vehicle travelling at 35 mph.
- Collisions that occurred at a distance over 350 feet away from the center of the intersection were identified as mid-block collisions.

Maps showing the spatial distribution and concentration of vehicle-involved collisions was created. The results of the vehicular safety analysis are summarized in **Section 4.4.2**.

Vehicular Quality

Analysis of the vehicular systems – roadways, intersections and freeways – were prepared for this study in accordance with City and SANTEC/ITE Traffic Impact Study Guidelines. The vehicular analysis provides an evaluation of vehicular operations at intersections and along roadway and freeway segments. A description of the methodologies employed to evaluate vehicular travel is outlined throughout this section.

Level of Service (LOS) is a quantitative measure representing the quality of service from the driver's perspective. LOS A represents optimal conditions for the driver, while LOS F represents the worst. **Table 2-13** describes generalized definitions of auto LOS A through F.

Table 2-13 Vehicular Level of Service Definitions

LOS	Characteristics
A	Primarily free-flow operation. Vehicles are completely unimpeded in their ability to maneuver within the traffic stream. Controlled delay at the boundary intersections is minimal. The travel speed exceeds 85% of the base free-flow speed.
B	Reasonably unimpeded operation. The ability to maneuver within the traffic stream is only slightly restricted and control delay at the boundary intersections is not significant. The travel speed is between 67% and 85% of the base free-flow speed.
C	Stable operation. The ability to maneuver and change lanes at mid-segment locations may be more restricted than at LOS B. Longer queues at the boundary intersections may contribute to lower travel speeds. The travel speed is between 50% and 67% of the base free-flow speed.
D	Less stable condition in which small increases in flow may cause substantial increases in delay and decreases in travel speed. This operation may be due to adverse signal progression, high volume, or inappropriate signal timing at the boundary intersections. The travel speed is between 40% and 50% of the base free-flow speed.
E	Unstable operation and significant delay. Such operations may be due to some combination of adverse signal progression, high volume, and inappropriate signal timing at the boundary intersections. The travel speed is between 30% and 40% of the base free-flow speed.
F	Flow at extremely low speed. Congestion is likely occurring at the boundary intersections, as indicated by high delay and extensive queuing. The travel speed is 30% or less of the base free-flow speed. Also, LOS F is assigned to the subject direction of travel if the through movement at one or more boundary intersections have a volume-to-capacity ratio greater than 1.0.

Source: Highway Capacity Manual, Transportation Research Board (2010)

CORRIDOR SPEED ANALYSIS

Corridors within the community were selected for analysis of travel time during the peak hours in addition to the estimated daily capacity. The corridor analysis consisted of three procedures:

- travel time runs performed under actual conditions,
- crowd-sourced data collection, and
- simulated travel time using traffic analysis software.

Field-Collected Travel Time Data

Travel time runs were performed using the floating car method. This method simulates average travel speed along a corridor by maintaining a similar position within vehicle progression bands. This provides a real point in time to compare with the crowd-sourced data and calibrate travel time expectations. The field-collected travel time data was obtained via the Traction application developed by Kimley-Horn and was compared with the crowd-sourced data to validate the information reflects a typical experience.

Crowd-Sourced Travel Time Data

Traction software was utilized to capture crowd-sourced travel times for a one-month period along the corridors. Data was collected at 10-minute intervals between 5:00 AM and 9:00 PM. This data provides information to show fluctuations in travel times at different times of days and on different days of the week. Further, it gives the ability to validate the field-collected travel time data.

Simulated Travel Time Data

A computerized estimate of arterial speed analysis was performed utilizing the Synchro 10 traffic analysis software (by Trafficware, 2011) and 6th Edition HCM methodology. The software provides a computation of LOS using average vehicle travel speed. This average speed is computed by adding the running time between signalized intersections assuming free flow speed along the corridor combined with the control delay associated with each signalized intersection.

Average speed is strongly influenced by the number of signals per mile and the average intersection delay. On a given facility, factors such as inappropriate signal timing, poor progression, and increasing traffic flow can substantially degrade the arterial LOS. **Table 2-14** presents the arterial LOS criteria based on the urban street class and average travel speed.

Table 2-14 Urban Street LOS Criteria

LOS	Travel Speed Threshold by Base Free-Flow Speed (mi/h)							Volume-to-Capacity Ratio*
	55	50	45	40	35	30	25	
A	> 44	>40	>36	>32	>28	>24	>20	≤1.0
B	>37	>34	>30	>27	>23	>20	>17	
C	>28	>25	>23	>20	>18	>15	>13	
D	>22	>20	>18	>16	>14	>12	>10	
E	>17	>15	>14	>12	>11	>9	>8	
F	≤17	≤15	≤14	≤12	≤11	≤9	≤8	
F	Any							>1.0

Source: Highway Capacity Manual 6th Edition, Chapter 18, Page 18-7, Exhibit 18-1
Note: * Volume-to-capacity ratio of through movement at downstream boundary intersection.

ROADWAY SEGMENT ANALYSIS

The analysis of roadway segment is LOS based on the functional classification of the roadway, the maximum capacity, roadway geometrics, and existing or forecast Average Daily Traffic (ADT) volumes. **Table 2-15** presents the roadway segment capacity and LOS standards utilized to analyze roadways evaluated in this report.

These standards are generally used as long-range planning guidelines to determine the functional classification of roadways. The actual capacity of a roadway facility varies according to its physical and operational attributes. LOS D is considered acceptable for Mobility Element roadway segments in the City of San Diego. Often, a roadway segment that is analyzed to be LOS E or F based on theoretical capacity is found to operate acceptably in practice. In such cases, HCM arterial analysis may be conducted and utilized (or intersection analysis, if arterial analysis is not applicable) to provide a more accurate indication of LOS.

Table 2-15 City of San Diego Roadway Segment Capacity and LOS Summary

Road Class	Lanes	A	B	C	D	E
Freeway	8	60,000	84,000	120,000	140,000	150,000
Freeway	6	45,000	63,000	90,000	110,000	120,000
Freeway	4	30,000	42,000	60,000	70,000	80,000
Expressway	6	30,000	42,000	60,000	70,000	80,000
Prime Arterial*	8	35,000	50,000	70,000	75,000	80,000
Prime Arterial*	7	30,000	42,500	60,000	65,000	70,000
Prime Arterial	6	25,000	35,000	50,000	55,000	60,000
Major Arterial*	7	22,500	31,500	45,000	50,000	55,000
Major Arterial	6	20,000	28,000	40,000	45,000	50,000
Major Arterial*	5	17,500	24,500	35,000	40,000	45,000
Major Arterial	4	15,000	21,000	30,000	35,000	40,000
Major Arterial*	2	7,500	10,500	15,000	17,500	20,000
Collector (w/ two-way left-turn lane)	4	10,000	14,000	20,000	25,000	30,000
Collector (w/o two-way left-turn lane) Collector (w/ two-way left-turn lane)	4 2	5,000	7,000	10,000	13,000	15,000
Collector (No fronting property)	2	4,000	5,500	7,500	9,000	10,000
Collector (w/o two-way left-turn lane)	2	2,500	3,500	5,00	6,500	8,000
Sub-Collector (single-family)	2	---	---	2,200	---	---

Notes:

The volumes and the average daily level of service listed above are only intended as a general planning guideline.

Levels of service are not applied to residential streets since their primary purpose is to serve abutting lots, not carry through traffic. Levels of service normally apply to roads carrying through traffic between major trip generators and attractors.

[1]Cross Section: Curb to Curb width (feet)/Right-of-way width (feet)

Sources:

City of San Diego Traffic Impact Study Manual, Table 2, Page 8, July 1998.

*City of San Diego Planning Department Mobility Staff Input

PEAK HOUR ARTERIAL ANALYSIS

Average arterial travel speed is strongly influenced by the number of signals per mile and the average intersection delay. On a given facility, factors such as inappropriate signal timing, poor progression, and increasing traffic flow can substantially degrade the arterial efficiency.

Typically, Synchro arterial analysis is used to determine the arterial speeds and resulting levels of service. However, this method was not producing results that agreed with the travel time data or the crowd-sourced data that was collected.

Synchro is a macroscopic analysis tool that has limitations by nature. Therefore, Synchro's microscopic counterpart SimTraffic was used to determine the arterial speeds for the study corridors. SimTraffic utilizes the data input into Synchro to build a model that measures the full impact of intersection queuing and blocking. SimTraffic was run three times for the AM and PM peak models to obtain average corridor speeds for the study segments. The SimTraffic arterial reports are provided in **Appendix G**.

PEAK HOUR INTERSECTION ANALYSIS

This section presents the methodologies used to perform peak hour intersection capacity analysis, for both signalized and unsignalized intersections. The following assumptions were utilized in conducting all intersection level of service analyses:

- **Volumes**: Collected turning movement counts and selected the single hour in the morning and afternoon that has the highest total intersection volume, independently evaluated for each individual intersection.
- **Peak Hour Factor**: Obtained from the turning movement count data for the highest total intersection volume, independently evaluated for each individual intersection. Peak Hour Factors were calculated and evaluated by intersection approach (eastbound, westbound, northbound, and southbound).
- **Pedestrian Calls per Hour**: Collected existing pedestrian counts during peak hours.
- **Heavy Vehicle Factor**: Heavy vehicles are defined as vehicles with three or more axles. Two percent is the standard, default heavy vehicle factor provided in HCM and Synchro 10 software.
    - At select locations where heavy vehicles are anticipated, vehicle classification data was included in the daily traffic volume data collection. Heavy vehicle factors along these corridors were assigned for the through movements at those respective intersection approaches along that corridor.
    - Where information was not collected, a heavy vehicle factor of two percent was assumed.
- **Signal Timing**: Obtained from existing signal timing plans.
- **Lane Geometry and Control**: Documented at the time counts were collected. Defacto right-turn lanes for signalized intersections were assessed based on criteria developed in coordination with the City.

Table 2-16 summarizes the LOS criteria for unsignalized intersections. Consistent with City policy, LOS D will be used in this study as the goal LOS to achieve for peak hour intersection operations.

Table 2-16. LOS Criteria for Intersections

LOS	Control Delay (sec/veh)		Description
	Signalized Intersections (a)	Unsignalized Intersections (b)	
A	≤10.0	≤10.0	Operations with very low delay and most vehicles do not stop.
B	>10.0 and ≤20.0	>10.0 and ≤15.0	Operations with good progression but with some restricted movement.
C	>20.0 and ≤35.0	>15.0 and ≤25.0	Operations where a significant number of vehicles are stopping with some backup and light congestion.
D	>35.0 and ≤55.0	>25.0 and ≤35.0	Operations where congestion is noticeable, longer delays occur, and many vehicles stop. The proportion of vehicles not stopping declines
E	>55.0 and ≤80.0	>35.0 and ≤50.0	Operations where there is significant delay, extensive queuing, and poor progression.
F	>80.0	>50.0	Operations that is unacceptable to most drivers, when the arrival rates exceed the capacity of the intersection.

Notes:
(a) Highway Capacity Manual 6th Edition, Chapter 19, Page 16, Exhibit 19-16
(b) Highway Capacity Manual 6th Edition, Chapter 20, Page 6, Exhibit 20-2

Signalized Intersections Analysis

The signalized intersection analysis utilized in this study conforms to the operational analysis methodology outlined in 6th Edition Highway Capacity Manual (HCM6). This method defines LOS in terms of delay, or more specifically, average control delay per vehicle (seconds/vehicle).

The HCM6 methodology sets 1,900 passenger-cars per hour per lane (pcphpl) as the ideal saturation flow rate at signalized intersections based upon the minimum headway that can be sustained between departing vehicles at a signalized intersection. The service saturation flow rate, which reflects the saturation flow rate specific to the study facility, is determined by adjusting the ideal saturation flow rate for lane width, on-street parking, bus stops, pedestrian volume, traffic composition (or percentage of heavy vehicles), and shared lane movements (e.g. through and right-turn movements sharing the same lane). The LOS criteria used for this technique are described in Table 2-16. The computerized analysis of intersection operations will be performed utilizing the Synchro 10 (HCM6 methodology) traffic analysis software (by Trafficware).

LOS for signalized intersections is defined in terms of delay, which is a measure of driver discomfort, frustration, fuel consumption, and loss of travel time. Specifically, LOS criteria are stated in terms of the

average control delay per vehicle for the peak 15-minute period within the hour analyzed. The average control delay includes initial deceleration delay, queue move-up time, and final acceleration time in addition to the stop delay.

Synchro 10 (Trafficware) software was used to analyze signalized intersections in the study area. Synchro provides the option to report methodologies for both 6th Edition and 2000 Editions of the HCM. The 6th Edition version of the HCM focused more on specific controller set ups, and due to these changes, there are several limitations within Synchro that do not allow results to be produced for an intersection. Some of these limitations include:

- Exclusive pedestrian phases
- Exclusive U-turn phases
- Right turn overlaps with through movements
- Permissive left turns yielding to pedestrians at a T-intersection
- Split phasing

For the intersections within the community that were not be able to produce results using the 6th Edition HCM methodology using existing signal timing settings, adjustments to the signal timing parameters, phasings, and/or geometries were made to represent similar operations but allow the Synchro software to publish 6th edition HCM results. Intersections were evaluated on a case-by-case basis to ensure the adjustments were producing similar results between the 6th Edition and 2000 Edition outputs. **Appendix F** summarizes the modifications that were made to each intersection in order to produce HCM 6th Edition results.

Unsignalized Intersections Analysis

Unsignalized intersections, including two-way and all-way stop controlled intersections were analyzed using the 6th Edition HCM unsignalized intersection analysis methodology. The Synchro 10 software supports this methodology and will be utilized to produce LOS results. LOS for unsignalized intersections is determined by the computed or measured control delay and is defined for each movement. At an all-way stop control intersection, the delay reported is the average control delay of all movements at the intersection. At a one-way or two-way stop control intersection, the delay reported represents the worst movement, which is typically the left-turn from the minor street approach.

Intersection Queue Analysis

Queuing analysis was performed for all exclusive turn lanes with storage length for all 92 study intersections. Storage lengths were measured based on the length of the lane in which a vehicle could queue rather than the length of the solid white line. Queue lengths were obtained from Synchro software.

FREEWAY SEGMENT ANALYSIS

Freeway segments were analyzed during the AM and PM peak hours based on the methodologies outlined in the 2000 HCM. The free-flow speed of each freeway segment was calculated based on a base free-flow speed of 65 mph, which is consistent with Caltrans' requirements for analyzing freeway segments. Factors affecting the free-flow speed of each segment include the lane width, lateral clearance, number of lanes, interchange density, and geometric design. Based on each segment's free-flow speed, the density was calculated, which is the primary factor for determining the segment's LOS. **Table 2-17** presents the freeway segment criteria based on density.

Table 2-17 Freeway Segment LOS Criteria

LOS	Density Range (pc/mi/ln)*
A	≤ 11
B	> 11 – 18
C	> 18 – 26
D	> 26 – 35
E	> 35 – 45
F	> 45 or any component segment v/c ratio > 1.00

Source: HCM 6th Edition, Chapter 12, Page 12-19, Exhibit 12-15
* passenger car per mile per lane

FREEWAY RAMP METER ANALYSIS

Ramp metering is a means of controlling the volume of traffic entering the freeway with the goal of improving the safety, traffic operations, and flow on the freeway main lanes. Freeway ramp meter analysis estimates the peak hour queues and delays at freeway ramps by comparing existing volumes to the meter rate at the given location. The fixed rate and uniform 15-minute maximum delay approaches are two approaches that are currently accepted by the City. The fixed rate approach is based solely on the specific time intervals that ramp meters are programmed to release traffic. The uniform 15-minute approach is based on the assumption that any demand exceeding 15-minutes will seek an alternate route or will choose to use the ramp during other time periods when the traffic demand is lower. The fixed rate approach was utilized in this study to analyze freeway ramp meters.

The excess demand at a freeway ramp forms the basis for calculating the maximum queues and maximum delays anticipated at each location. Substantial queues and delays can form where demand significantly exceeds the meter rate. This approach assumes a static rate throughout the course of the peak hour; however, Caltrans has indicated that the meter rates operate in a traffic responsive mode and based on the level of traffic using the on ramp. To the extent possible, the meter rate in the field is set such that the queue length does not exceed the available storage, smooth flows on the freeway mainline are maintained, and there is no interference to arterial traffic.

Meter rates were provided by Caltrans and include a range between the least and most restrictive rates. Since many of the freeways currently operate at or above its capacity during the peak hours, the most restrictive rate was used for the analysis. Some rates were adjusted within the range of rates provided to better reflect queue lengths consistent with field observations. The field observations were completed at each ramp meter location.

The following list contains the assumptions used for the existing conditions ramp meter analyses based on field observations:

- Storage length measured from recent aerials of the area
- 20% High Occupancy Vehicle (HOV)
- 80% Single Occupancy Vehicle (SOV) and evenly distributed between the SOV lanes
- 25-foot vehicle length

Vehicular Network Connectivity

Senate Bill 743 (SB 743) was signed into law in September 2013, modifying the existing California Environmental Quality Act (CEQA) by removing auto delay, level of service (LOS), parking and other vehicular capacity measures as metrics of transportation system impacts for mixed-use, infill or transit oriented development projects. Vehicle miles travelled (VMT) is considered the new analysis metric used to measure transportation impacts. VMT is a reflection of the land use type, intensity and location in relation to the capacity and roadway connectivity of the transportation network. It is also influenced by the availability and quality of multimodal facilities, and system operations.

VMT changes between existing and future land uses will be evaluated in the future mobility analyses when traffic models are prepared. This report did not rely on traffic models for its information and did not complete a community-wide VMT.

3 REVIEW OF RELEVANT PLANNING DOCUMENTS

This section provides information on other planning documents that include Mira Mesa community.

3.1 CITY OF SAN DIEGO PLANS, PROGRAMS, AND PROJECTS

CITY OF SAN DIEGO GENERAL PLAN – MOBILITY ELEMENT

Adopted in 2008 and amended in 2015, the City of San Diego's General Plan Mobility Element identifies the proposed transportation network and strategies that have been designed to meet the future transportation needs generated by planned land uses in the General Plan. The purpose of the Mobility Element is to improve mobility through development of a balanced, multi-modal transportation network. The Mobility Element includes several programs, including but not limited:

- Walkable Communities
- Transit
- Street and Freeway System
- Intelligent Transportation Systems
- Transportation Demand Management
- Bicycling
- Parking management
- Goods Movement/Freight
- Regional Coordination/Financing
- Passenger Rail

Within each of the above programs is series of policies designed to help achieve the goals of the program itself.

CURRENT MIRA MESA COMMUNITY PLAN

Adopted in 1992, the Mira Mesa Community Plan includes a series of goals and recommendations that guided development in the community for the subsequent 27 years. The Mira Mesa Community Plan contains a series of goals and objectives established with input by the residents, property owners, and business owners of the Mira Mesa community, and were also consistent with citywide policies and the time of its adoption. The objectives for transportation include:

- an efficient and environmentally sensitive transportation system;
- a transportation system that provides convenient linkages to the community's activity centers and to the rest of the metropolitan region;
- a transportation system that maximizes the opportunities for transit use; and
- a system of bikeways and pedestrian facilities that will encourage bicycling and walking as means of transportation

Using these goals and the analysis performed at the time of its creation, the adopted Mira Mesa Community Plan includes recommended changes to street classifications, intersection improvements, public transit service, pedestrian facilities, bikeway system, and trail systems within the Mira Mesa community. These

recommendations will be reviewed and updated as part of the analysis conducted for the Mira Mesa Community Plan Update.

The adopted Mira Mesa Community Plan also evaluated with and without a Camino Ruiz bridge crossing over the Los Peñasquitos Canyon Preserve. The Plan proposes that Camino Ruiz terminate just north of Calle Cristobal and not provide the bridge connection.

CITY OF SAN DIEGO CAPITAL IMPROVEMENTS PROGRAM (CIP)

The City's Capital Improvements Program (CIP) is the five-year plan for all individual capital improvement projects and funding sources. CIP projects are unique construction projects that provide improvements or additions such as land, buildings, and infrastructure.

The CIP helps enhance the overall quality of life in the City by improving the physical structures, systems, and facilities that provide services to the community. CIP projects are generally large and expensive, and the assets they install, replace, or rehabilitate will likely be required for decades of public use.

Table 3-1 summarizes the transportation projects within Mira Mesa that are identified in the CIP as being within the preliminary engineering, design, bid and award, or construction phase:

Table 3-1 Capital Improvement Program Projects

Project Number	Project Name	Phase	Funding Status
B17188	Street reconstruction of Gold Coast Drive from Thanksgiving Lane to Camino Ruiz and Parkdale Avenue from Northrup to Mira Mesa Boulevard	*Preliminary engineering*	*Partially funded*
S00914	Sorrento Valley Road & Interstate 5 Interchange Improvements	*Design*	*Partially funded*
B14012 **B15012** **B16007** **B16008** **B17050** **B17051**	Install street lights in various locations	*Design; Bid/Award; Construction*	*Partially funded*
B14048 **B00902**	Upgrade curb ramps and remove signal poles off medians, install pedestrian countdown times, upgrade vehicle heads and install EVPE	*Construction*	*Fully funded*

CITY OF SAN DIEGO CLIMATE ACTION PLAN

Adopted in December 2015 and amended in July 2016, the City of San Diego's Climate Action Plan (CAP) aims to reduce greenhouse gas (GHG) emissions to specific targets in the year 2020 and 2035. The CAP aims to reduce emissions in part through a variety of improvements to existing vehicular, pedestrian, bicycling, and transit networks. It includes goals to create walkable and pedestrian-friendly neighborhoods and to promote active transportation and rapid transit systems.

Several of the targets included in the CAP are related to performance within transit priority areas. Per California Senate Bill 743 (SB 743), "Transit priority area" means "an area within one-half mile of a major transit stop that is existing or planned, if the planned stop is scheduled to be completed within the planning horizon included in a Transportation Improvement Program adopted pursuant to Section 450.216 or 450.322 of Title 23 of the Code of Federal Regulations." A Major Transit Stop, as defined in the California Public Resources Code (CPRC) Section 21064.3, means: a site containing an existing rail transit station, a ferry terminal served by either a bus or rail transit service, or the intersection of two or more major bus routes each having a frequency of service of 15 minutes or less during the morning and afternoon peak commute periods.

Among others, the CAP specifically identifies the following actions as targets which would reduce overall GHG emissions:

- Achieve mass transit mode share of 12% by 2020 and 25% by 2035 in Transit Priority Areas.
- Achieve walking commuter mode share of 4% by 2020 and 7% by 2035 in Transit Priority Areas.
- Achieve 6% bicycle commuter mode share by 2020 and 18% mode share by 2035 in Transit Priority Areas.
- Retime 200 traffic signals by 2020.
- Install roundabouts at 15 intersections by 2020 and an additional 20 intersections by 2035.
- Reduce average vehicle commute distance by two miles through implementation of the General Plan City of Villages Strategy by 2035.

The CAP also identifies the following supporting measures for walking, biking, and transit:

- Implement bicycle improvements concurrent with street re-surfacing projects, including lane diets, green bike lanes, sharrows, and buffered bike lanes.
- Implement a bicycle sharing program with DecoBikes. Reduce the "1 mile" barrier gap by ensuring that further expansion of the bike share program is designed and implemented to reduce the distance needed to travel between transit stops and destinations.
- Identify and address gaps in the City's pedestrian network and opportunities for improved pedestrian crossings, using the City's Pedestrian Master Plan and the City's sidewalk assessment.
- Adopt City portions of SANDAG's forthcoming first mile/last mile initiative and incorporate Safe Routes to Transit strategies in Transit Priority Areas.
- Coordinate pedestrian counting programs with SANDAG and SDSU Active Transportation Research Programs.
- Develop a Parking Plan to include measures such as "unbundled parking" for nonresidential and residential sectors in urban areas.
- Prepare a Commuter Report with measures to increase commuting by transit for City employees.

- Achieve better walkability and transit-supportive densities by locating a majority of all new residential development within Transit Priority Areas.
- Develop a new priority ranking for capital improvement projects in Transit Priority Areas that will be integrated into Council Policy 800-14, Community Development Block Grant and other grant opportunities, and Public Facilities Financing Plans.
- In addition to commuting, implement infrastructure improvements including "complete streets" to facilitate alternative transportation modes for all travel trips.
- The most recent version of the California Office of Environmental Health Hazard Assessment (OEHHA) CalEnviroScreen tool will be used as one method to identify and help prioritize, when possible, underserved communities in census tracts ranking in the top 30% of CalEnviroScreen scores, which may be locally normalized, for transit-related infrastructure improvements and capital improvements.

CITY OF SAN DIEGO BICYCLE MASTER PLAN

Adopted in December 2013, the City Bicycle Master Plan (BMP) presents a vision for bicycle transportation, recreation and quality of life in San Diego. The vision is closely aligned with the 2008 General Plan's mobility, sustainability, health, economic, and social goals. The bicycle network, projects, policies, and programs included in the Bicycle Master Plan provide the City with a strong framework for improving bicycling through 2030 and beyond.

The goals of the BMP are to create:

- A city where bicycling is a viable travel choice, particularly for trips of less than five miles
- A safe and comprehensive local and regional bikeway network
- Environmental quality, public health, recreation and mobility benefits through increased bicycling

The BMP proposes the following key bicycle facilities within the Mira Mesa community planning area:

- Mira Mesa Boulevard, Parkdale Road to Interstate 15: Class II (gap closures)

CITY OF SAN DIEGO PEDESTRIAN MASTER PLAN

Adopted in December 2006, the City Pedestrian Master Plan guides the way the City plans and implements new or enhanced pedestrian projects. The Pedestrian Master Plan helps the City enhance neighborhood quality and mobility options by facilitating pedestrian improvement projects. The Plan identifies and prioritizes pedestrian projects based on technical analysis and community input, and improves the City's ability to receive grant funding for implementing these projects.

The Pedestrian Master Plan is intended to be a complementary document to the General Plan, the Transit Oriented Development Guidelines, the San Diego Association of Government's (SANDAG) Planning and Designing for Pedestrians, the Street Design Manual and more specifically, the Mobility Element of the City's General Plan.

The vision statement for the Pedestrian Master Plan is: "To create a safe, accessible, connected and walkable pedestrian environment that enhances neighborhood quality and promotes walking as a practical

and attractive means of transportation in a cost-effective manner." The goals which both support the vision statement and serve as project prioritization criteria are:

- Safety: Create a safe pedestrian network free of barriers and tripping hazards that has sufficient street crossings, buffer pedestrians from vehicles and has facilities wide enough to accommodate peak pedestrian use.
- Accessibility: Make facilities accessible to pedestrians of all abilities and meet all local, state, and federal requirements.
- Connectivity: Develop a complete pedestrian network that provides direct and convenient connections for neighborhoods, employment centers, transit stations, public places and community destinations.
- Walkability: Create pedestrian facilities that offer amenities to encourage usage and to enhance the pedestrian experience.

The Pedestrian Master Plan concludes with "Phase Two Guidance" providing direction for community-level Pedestrian Master Plans (CPMP). The guidance aims to establish a level of consistency among the plans and analysis methodologies utilized.

CITY OF SAN DIEGO TRANSPORTATION UNFUNDED NEEDS LIST (TUNL) PROJECTS

As noted previously, the City's CIP identifies projects that help enhance the overall quality of life in the City by improving, among other things, transportation infrastructure. Projects included in the CIP are funded via a variety of sources, including bonds, development impact fees, and City general funds, among others.

Often times, sufficient funding does not exist for all mobility projects that are identified in the CIP. As such, projects without identified funding are included in the Transportation Unfunded Needs List (TUNL). The TUNL is maintained by the City to keep an inventory of projects which can be implemented should sufficient funding become available. Projects included in the TUNL may or may not be identified in other planning documents. **Table 3-2** provides a brief description, location, type, and status of current TUNL projects within the Mira Mesa Community Plan area.

Table 3-2 Transportation Unfunded Needs List (TUNL) Projects

ID	Location	Description
Roadway Segments/Intersections		
47	Black Mountain Rd - Gemini Ave to Mira Mesa Blvd	Widen the east side of Black Mountain Road from Gemini Avenue to Mira Mesa Boulevard for an additional northbound lane. Class II Bike Lanes are included.
48	Black Mountain Rd - Galvin Ave to Gemini Ave	Widen to a 6-Lane Prime Arterial with Class II Bike Lanes.
36	Carroll Canyon Rd - Camino Santa Fe to Camino Ruiz	Construct 6-lane facility
56	Kearny Villa Rd - Black Mountain Rd to 600' s/o Miramar Rd	Widen to a 6-Lane Prime Arterial with Class II Bike Lanes
57	Carroll Canyon Rd - Scranton Rd to El Camino Memorial Park Western Entrance	Provide all necessary improvements to upgrade to standards for a 4-Lane Major Arterial and install traffic signals at Scranton Road and Nancy Ridge Road intersection.
53	Miramar Rd at Kearny Villa Rd	Widen both the east and west legs of Miramar Rd at the intersection by adding additional left hand and right-hand turn lanes.
55	Black Mountain Rd - Gold Coast Dr to Maya Linda Rd	Provide for the widening of a 6-Lane Prime Arterial with Class II Bike Lanes
51	Camino Santa Fe at Miramar Rd	Widen both the north leg of Camino Santa Fe and the east leg of Miramar Road by adding a SB to WB right turn lane and a WB to NB right turn lane.
39	Camino Ruiz - Gold Coast Dr to Jade Coast Dr and 400' north of Miralani Dr to Miramar Rd	Widen these segments of Camino Ruiz to a modified 6-Lane Major Arterial. Class II Bicycle Lanes will be installed from Mira Mesa Blvd to Gold Coast Dr and within the project limits.
42	Black Mountain Rd at Mira Mesa Blvd	Widen Black Mountain Road to provide a NB right turn lane with Class II Bike Lanes.
49	Black Mountain Rd - Hillery Dr to Gold Coast Dr	Widen to a 6-Lane Prime Arterial with Class II Bike Lanes.
54	Black Mountain Rd - Mira Mesa Blvd to Hillery Dr	Widen to a 6-Lane Prime Arterial with Class II Bike Lanes.
52	Black Mountain Rd at Mercy Rd	Widen Black Mountain Road to provide an additional NB through lane.
33	Mira Mesa Blvd - Black Mountain Rd to I-15	Widen to provide an 8-lane Prime Arterial with landscaped median and Class II Bike Lanes.

ID	Location	Description
35	Carroll Canyon Rd - Carroll Rd to Camino Ruiz	Construct a 4 and 6 Lane Major Arterial with Class II Bike Lanes. Section 5A is from the Western Fenton Property Boundary westerly to Carroll Road. Section 5B is from Camino Santa Fe westerly to Fenton Property Boundary. Section 5C is from Camino Ruiz westerly to Camino Santa Fe.
37	Carroll Canyon Rd - Camino Ruiz to Black Mountain Rd	Construct as a 6-Lane Major Arterial with Class II Bike Lanes from Camino Ruiz to Maya Linda Rd. Construct as a 4-Lane Major Arterial with Class II Bike Lanes from Maya Linda Rd to Black Mountain Rd. Include medians consistent with Community Plan.
38	Maya Linda Rd - Carroll Canyon Rd to Black Mountain Rd	Construct as a 4-Lane Collector with Class II Bicycle Lanes. Include median consistent with Community Plan.
40	Camino Ruiz - Jade Coast Dr to Maralani Dr	This project pertains to Camino Ruiz from the East Leg of Jade Coast Drive to Miralani Drive for the northbound side and, southbound side, from Jade Coast Drive to the northern most boundaries of the Miralani Business Park. Provides for the widening of Camino Ruiz to a 6-Lane Major Arterial with a 14-ft wide, landscaped, raised-center-median (with dual 10-ft left-turn lanes at Carroll Canyon Road), streetlights, and Class II Bike Lanes. Reconstruct existing curve to increase stop/sight distance.
50	Camino Santa Fe - Carroll Rd to 350' s/o Commerce Ave	Widen to a 6-Lane Major Arterial with Class II Bike Lanes.
Traffic Signals		
43	Aquarius Dr at Camino Ruiz	Install a new traffic signal. Is listed in the Mira Mesa FFP as project 15-40 (8), for construction in 2015 at an est cost of $250,000, FBA. Community group voted in favor of signal May 19th, 2014
1319	Carroll Rd at Nancy Ridge Dr	Install a new traffic signal
44	Carroll Canyon Rd at Carroll Rd	Install a traffic signal at the future intersection of Carroll Canyon Road (now Fenton Rd) & Carroll Road.
Street Enhancements		
2	Camino Ruiz at Capricorn Wy	Extend the existing raised median nose further north and prohibit left turning movements near the intersection.
Pedestrian		
	Missing Sidewalk Inventory	

ID	Location	Description
46	Black Mountain Rd - Mid-block between Gold Coast Dr & Hillery Dr	Provide a mid-block pedestrian bridge across Black Mountain Road.
Traffic Calming		
6858	Flanders Dr at Flanders Pl	Install two Pedestrian Activated Flashing Beacons at the intersection.
7057	Montongo St at Goleta Rd	Install Pedestrian Activated Flashing Beacon at the intersection.
721	Avenida Del Gato at Zapata Ave	Install a Type 1A Flashing Yellow Beacon with school warning sign facing NB traffic.
722	Avenida Del Gato at Los Sabalos	Install a Type 1A Flashing Yellow Beacon with school warning sign facing SB traffic.
7752	Mercy Rd - Chabola Rd to Alemania Rd	Install two V-calm signs.
7632	Calle Cristobal - Near Frames Port Pl	Install one V-calm sign facing WB traffic.
7055	Mesa Rim Road	Install two V-calm signs.
7056	Miramar Way	Install two V-calm signs.
8061	Camino Ruiz - Westmore Rd to Capricorn Wy	Install one V-calm sign facing NB traffic.
8062	Calle Cristobal - Camino Ruiz to Camino Santa Fe	Install two V-calm signs.
Bicycle		
444	Mira Mesa Blvd - Parkdale Rd to I-15 SB Ramps	Install Class II bike lanes through either removal of parking or narrowing of median.
4055	Mira Mesa Blvd - I-15 SB Ramps to I-15 NB Ramps	Spot treatment
22	I-805 - Carroll Canyon Rd to Eastgate Mall	Construct a Class I bike path to provide a connection between Mira Mesa and University Towne Center along I-805.

3.2 REGIONAL PLANS

SAN DIEGO FORWARD: THE REGIONAL PLAN

Adopted in October 2015 by SANDAG, the San Diego Forward: The Regional Plan (RTP) is an overarching blueprint for a more sustainable future. It combines a big-picture vision for how the region will grow over the next 35 years (through the year 2050) with an implementation program to help make that vision a reality. At its core, it relies on creating a transportation network that will provide more choices to people in the region, which in turn will protect the environment, create healthy communities, and stimulate economic growth.

The Regional Plan builds upon local planning efforts by emphasizing the link between land use planning and transportation planning. Closer integration of the two will result in more compact and sustainable communities, helping the region meet greenhouse gas (GHG) reduction targets. As it is implemented, the Plan will enhance the movement of both people and goods, as well as break new ground by incorporating components aimed at enhancing public health.

The vision statement for this long-range blueprint – which will carry the region through 2050 – is "to provide innovative mobility choices and planning to support a sustainable and healthy region, a vibrant economy, and an outstanding quality of life for all."

There are planned roadway and transit investments identified in the RTP to increase mobility connections for the Mira Mesa community. These include the following:

Transit Projects
- Extend existing Rapid 235 Bus service between Temecula and Downtown San Diego, running through Mira Mesa
- Double tracking for Coaster with peak frequencies of 20 minutes
- Rapid 30 Bus service from Old Town to Sorrento Mesa
- Rapid Route 688 bus service from San Ysidro to Sorrento Mesa via I-805/I-15/SR-52 during peak hours
- Rapid Route 690 bus service from Mid-City to Sorrento Mesa via I-805 corridor during peak hours
- High frequency bus route along Carroll Canyon Road
- Bus service frequency enhancements for routes 110, 237, and 921

Managed Lanes/Toll Lanes Projects
- Addition of 4 Managed Lanes to I-805 between Carroll Canyon Road and State Route 52

Operational Projects
- Addition of North to North and South to South Managed Lane connectors between I-5 and I-805

Active Transportation Projects
- Mira Mesa Bike Boulevard
- Mira Mesa Corridor – Reagan Rd to Parkdale Ave
- Mira Mesa Corridor – Scranton Road to I-805
- Mira Mesa Corridor – Sorrento Valley Road to Sorrento Valley Boulevard

SAN DIEGO REGIONAL BIKE PLAN: RIDING TO 2050

Adopted in April 2010 by SANDAG, Regional Bike Plan identifies a vision for a regional bicycle system of interconnected bicycle corridors, support facilities, and programs to make cycling more appealing to a broader range of the population. The document includes recommendations and goals that strive to increase bicycle ridership for all purposes. It also encourages the development of Complete Streets, to improve safety for bicyclists, and to increase public awareness and support for bicycling in the region. There is one "high priority" planned regional corridor alignments within the Mira Mesa community:

- Mira Mesa Boulevard, Parkdale Road to Interstate 15

3.3 LOCAL PRIVATE DEVELOPMENT PROJECTS

Private development projects in the community can also contribute towards network improvements depending on the size, location, and findings of transportation impact analyses performed as part of entitlement processes. **Table 3-3** summarizes development projects identified in the Mira Mesa community as of January 2019. As shown in the table, no specific mitigation measures have been identified for these local development projects at this time. These projects should be reviewed for updated status when developing the future network.

Table 3-3 Local Development Projects

Project Name	Approval Process Type	Mitigation
One Pacific Heights	Substantial Conformance Review	None Identified
Paws for Purple Hearts	Neighborhood Use Permit	None Identified
The Institute	Conditional Use Permit	None Identified
Stone Creek	Community Plan Amendment	Pending
Mira Sorrento Office	Community Plan Amendment	Pending
3 Roots	Community Plan Amendment	Pending
MPF 9225 Brown Deer Rd	Conditional Use Permit	Pending
Teak Warehouse	Neighborhood Use Permit	None Identified

4 EXISTING CONDITIONS

This chapter describes the activity patterns, performance and facility evaluations for all modes of transportation in Mira Mesa, including pedestrian, bicycle, transit, and vehicular. The chapter also summarizes community intelligent transportation systems (ITS) and travel demand management (TDM) strategies, and interaction with regional passenger rail, airports, and goods movement.

4.1 PEDESTRIAN MOBILITY

The following section summarizes the existing pedestrian environment in Mira Mesa using the following evaluations:

Demand	• Using existing turning movement count data • Based upon the Pedestrian Priority Model (PPM) • Based upon census-based mode share data • Using route typology definition
Safety	• Using collision data for a recent five-year period
Quality	• Using Pedestrian Environment Quality Evaluation (PEQE) analysis
Connectivity	• Using network and sidewalk inventory data • Using a walkshed ratio evaluation

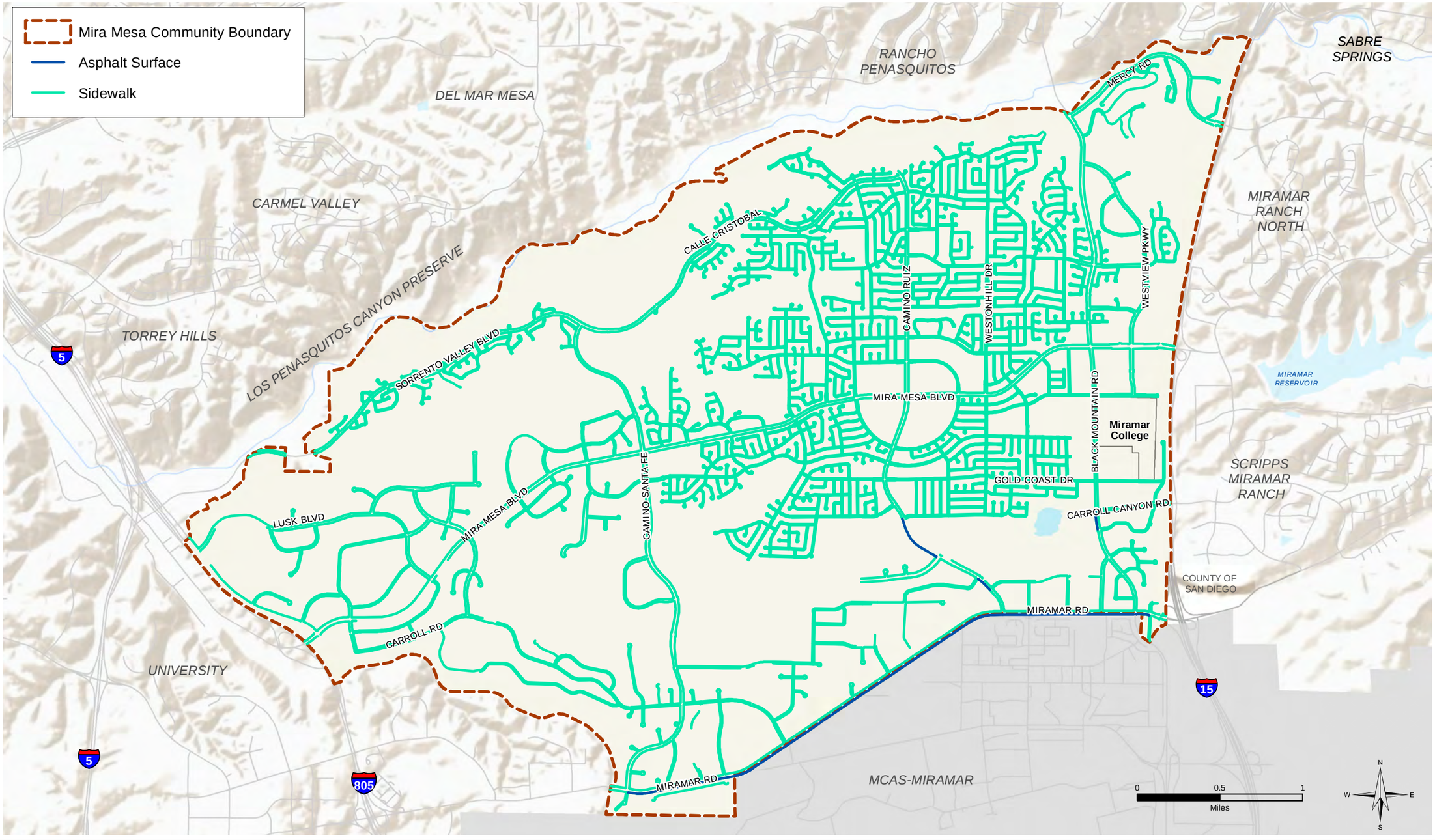
The City collects and maintains an inventory of the sidewalks within and adjacent to the Mira Mesa community. This information was used to create a baseline pedestrian network and to help determine existing pedestrian facilities, missing facilities and connections within the community. The data is not all-inclusive, but has the necessary information to determine the adequacy of pedestrian connections. **Figure 4-1** presents an overview of the sidewalk inventory within the community. It is important to note that the available sidewalk inventory does not include separated trails, such as those within the canyons of the community and includes existing raised sections of asphalt along roadways such as the south side of Miramar Road and the west side of Camino Ruiz between Jade Coast Drive and Carroll Canyon Road.

4.1.1 PEDESTRIAN DEMAND

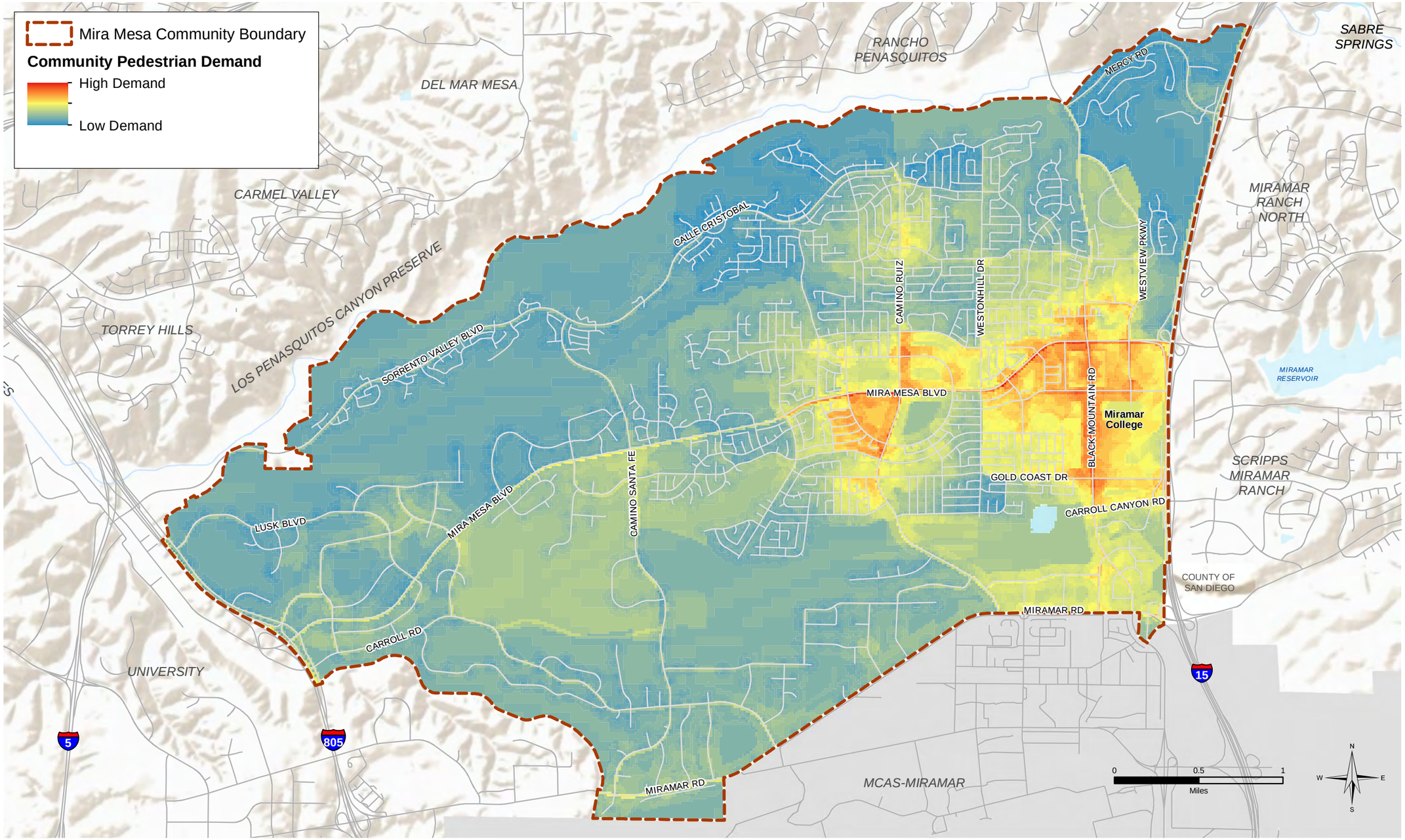
City of San Diego Pedestrian Priority Model (PPM)

Pedestrian demand was evaluated using the City's PPM. The PPM was created to identify areas within the City where there is relatively high demand or propensity for walking. This is combined with an analysis of trip detractors or deficiencies to assess where both existing and latent demand for walking may exist. **Figure 4-2** presents the pedestrian demand in the Mira Mesa community based on the results of the PPM.

As seen in the figure, pedestrian demand is highest near Miramar College and the retail adjacent to it, as well as in the area along Mira Mesa Boulevard between Reagan Road and Camino Ruiz. Demand is closely correlated with the retail areas of the community, as well as the community college and high school. The college has approximately 21,000 students and generates interaction with the adjacent street network for



Existing Pedestrian Network



Pedestrian Demand

walking to and from transit or nearby retail and recreation areas. These areas of highest pedestrian demand are also roadways with high vehicle volumes. This creates a natural tension between pedestrians and vehicles in these areas.

Demand is predictably lower in the residential areas of the community. The large employment areas in the western area of the community and along Miramar Road also have low demand. These employment areas have little interaction between the individual employers as there are little to no retail or residential areas within walking distance.

The pedestrian study area, shown in Figure 2-1, was initially established using the above average demand areas for this community dataset. A separate exercise was performed in coordination with City staff to expand the pedestrian study area to include locations with 2 or more pedestrian collisions, locations within 0.5 miles of major transit stops, major and collector roadways, and corridors that satisfied pedestrian network gaps or connections to schools and parks.

Pedestrian Commute Mode Share

Pedestrian commute mode share is another measure of where demand exists for pedestrian infrastructure or where existing facilities are successfully serving some pedestrian commutes. American Community Survey data, 2017 5-year estimates, were used to determine how the commute mode share in the Mira Mesa community compares to both the City and the County of San Diego. **Table 4-1** presents the pedestrian commute mode share comparison. The Mira Mesa community has a mode share similar to the average of both the City and County of San Diego.

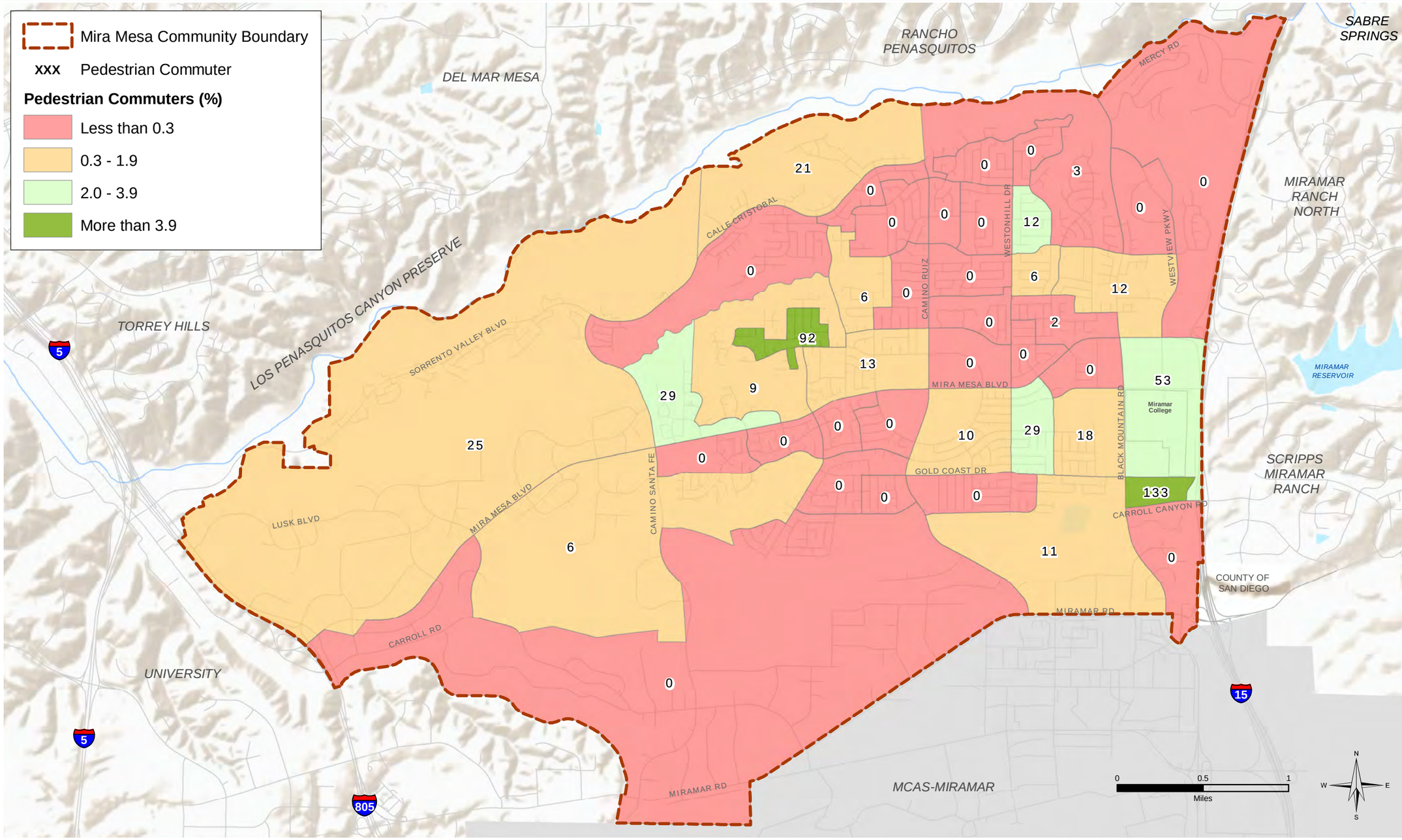
Table 4-1 Pedestrian Commute Mode Share Comparison

	Mira Mesa	City of San Diego	San Diego County
Total Pedestrian Commutes	1,597	22,188	45,600
Total Workers	58,910	762,993	1,549,529
Pedestrian Commute Mode Share	***2.7%***	***2.9%***	***2.9%***

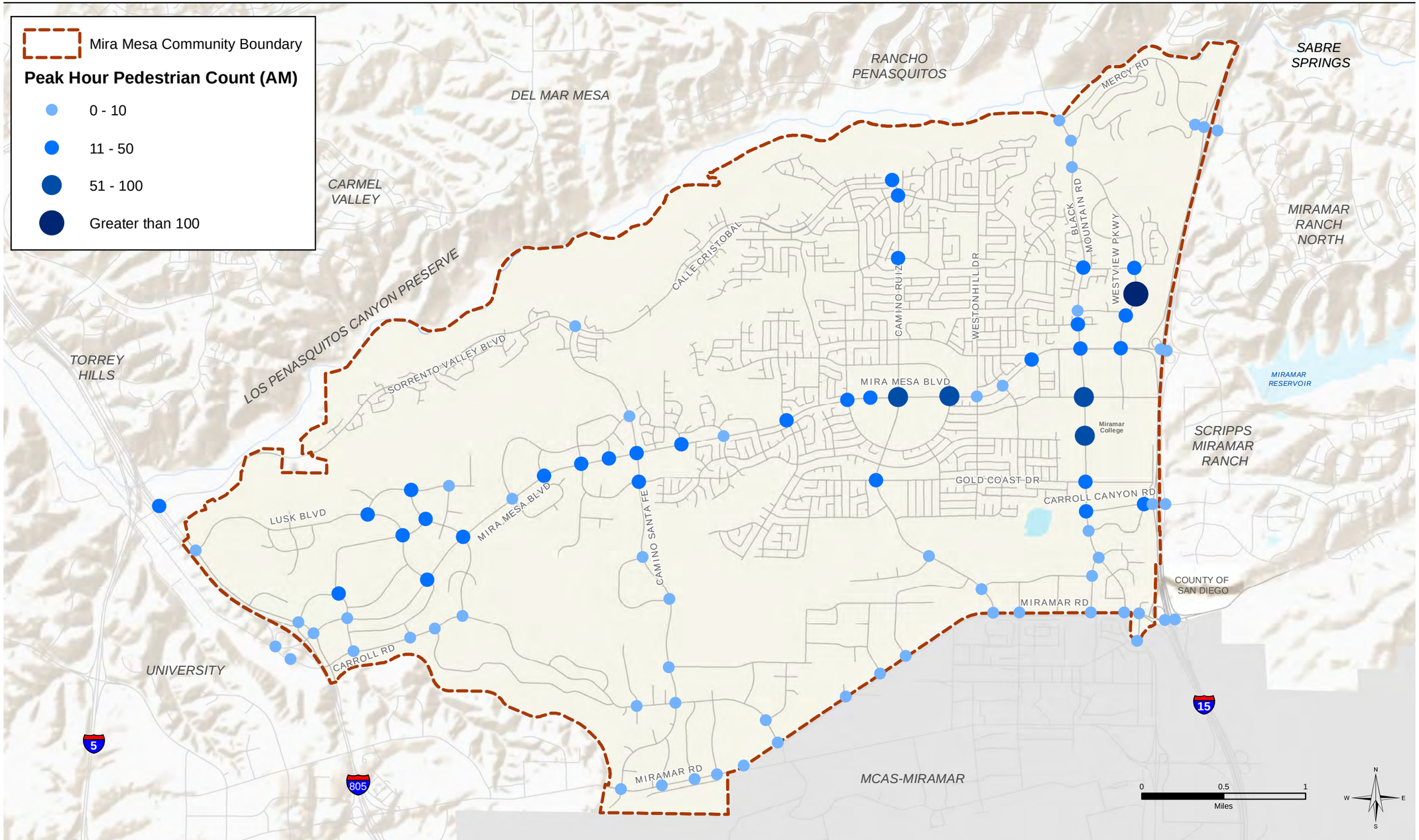
Figure 4-3 shows the pedestrian commute mode share by census block group. As shown in the figure, the areas closest to Miramar College and some residential areas near Mira Mesa Boulevard have high commute mode share. The southern, industrial portion of the community and most of the residential areas have no pedestrian commuters.

Pedestrian Count Data

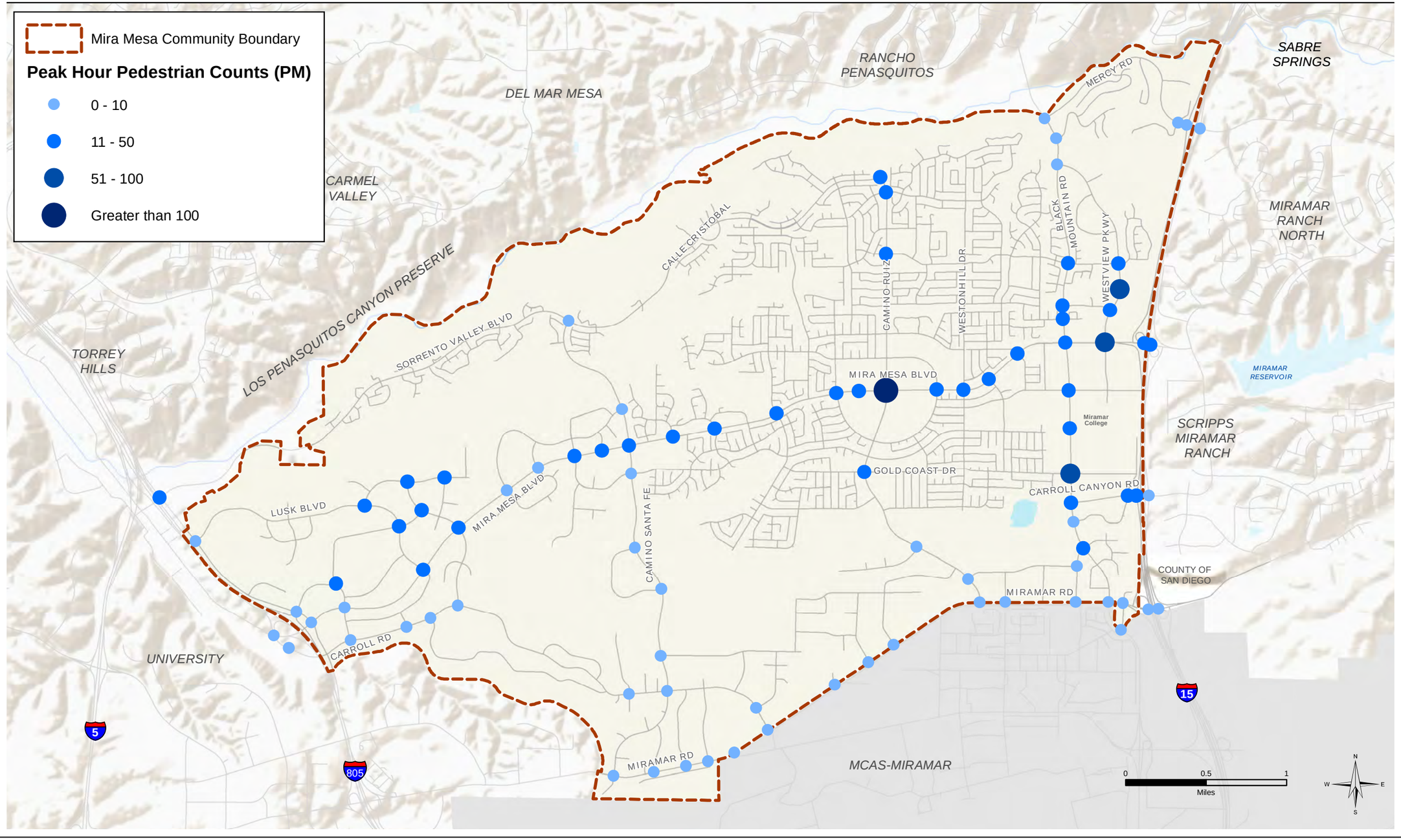
Figure 4-4 and **Figure 4-5** display the AM and PM peak hour pedestrian movements observed at the 92 study intersections. Individual intersection count sheets are provided in **Appendix E**. The pedestrian count data supports the pedestrian demand model output as well as the pedestrian commute mode share data. In general, pedestrian activity is slightly greater during the AM peak hour, and activity is greatest near key destinations in Mira Mesa such as Miramar College, retail areas, schools, and parks.



Pedestrian Commute Mode Share by Census Block Group



Pedestrian Peak Hour Volumes (AM Peak)



Pedestrian Peak Hour Volumes (PM Peak)

Pedestrian Route Typology

Route typology is a fourth way to look at pedestrian demand. As noted in the methodology section, route types are divided into seven categories ranging from District to Trail. These typologies work to define the function which a route serves and establishes a hierarchy for the development of priority pedestrian improvements. The results of the typology evaluation are presented in **Figure 4-6**Error! Not a valid bookmark self-reference.**.** With the current land use and building orientations, there are no district or corridor routes currently identified in the Mira Mesa community. This is mainly due to a lack of interaction of roadway-fronting buildings and attractions. All roadways are either connectors or neighborhood streets.

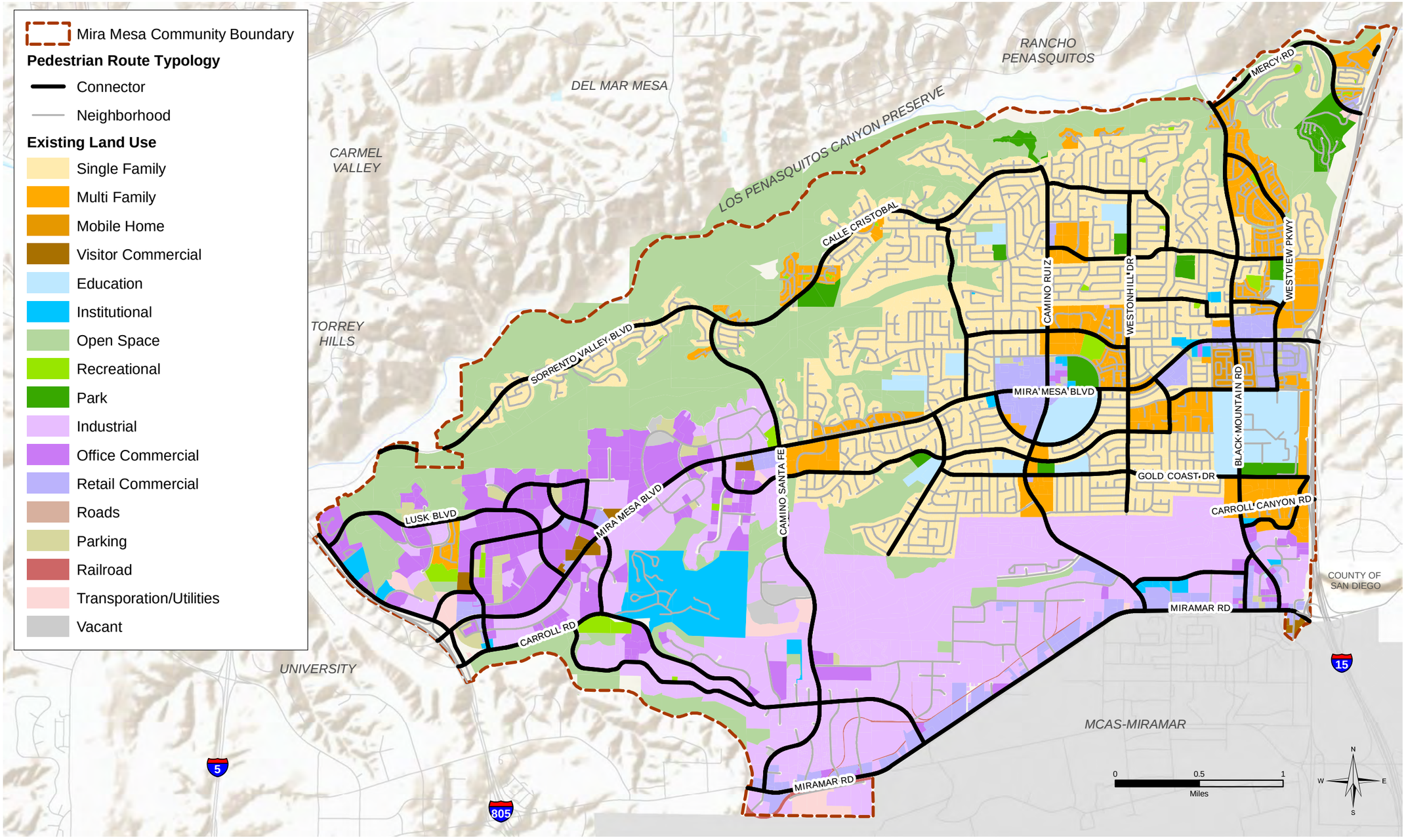
4.1.2 PEDESTRIAN SAFETY

Between October 2012 and September 2017, there were a total of 87 reported collisions involving pedestrians within the Mira Mesa community. In the State of California, collision reports must be generated for any collision where: property damage equals or exceeds 750 dollars, city property is involved, someone is injured, a fatality occurs, a pedestrian or cyclist is involved, is a hit-and-run collision, or a Driving Under the Influence (DUI) collision occurs. It is important to note some pedestrian incidents may go unreported and therefore, cannot be included in this analysis. Reported pedestrian-involved collision data within the vicinity of the community planning area are illustrated in **Figure 4-7**. Additional information on these collisions is provided in tables below and in **Appendix A**.

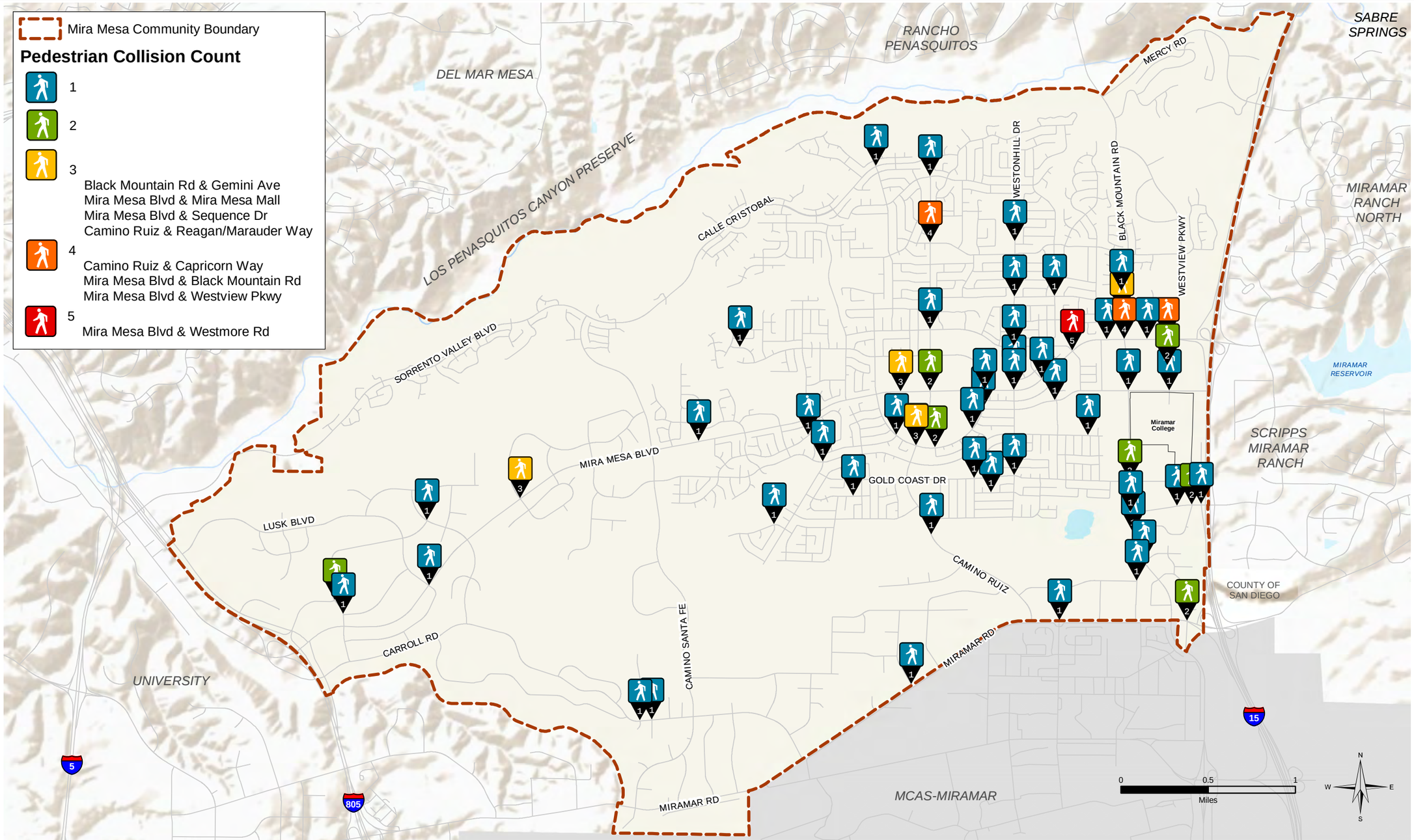
Most locations have isolated incidents, while a few locations have identified multiple collisions. Locations within 350 feet of an intersection were considered intersection-related, and bundled with the adjacent intersection. Mid-block locations were then evaluated on a case-by-case basis, and bundled if they occurred within close proximity of each other with similar roadway characteristics and collision trends. **Table 4-2** identifies those intersections with three or more collisions within the five-year period. A more in depth look at the causes of these collisions will help to identify improvements needed at these locations.

Table 4-2 Most Frequent Pedestrian Collision Locations

Intersection	Collisions
Mira Mesa Blvd & Westmore Rd/Marbury Ave	5
Mira Mesa Blvd & Westview Pkwy	4
Mira Mesa Blvd & Black Mountain Rd	4
Camino Ruiz & Capricorn Wy	4
Black Mountain Rd & Gemini Ave	3
Mira Mesa Blvd & Mira Mesa Mall	3
Mira Mesa Blvd & Sequence Dr	3
Camino Ruiz & Reagan Rd/Marauder Wy	3



Pedestrian Route Typology



Pedestrian Collision History (Oct 2012 – Sept 2017)

Table 4-3 summarizes the location types for pedestrian-involved collisions, differentiating between intersection, mid-block, and approaching/departing locations. The majority (85 percent) of pedestrian-involved collisions occurred at intersections.

Table 4-3 Pedestrian Collisions by Location Types

Collision Location Type	Collisions	Percent of Total
Approaching/Departing	10	12%
Intersection	74	85%
Mid-Block	3	3%
Total	***87***	***100%***

Table 4-4 identifies the party-at-fault for each reported pedestrian-involved collision. Drivers and pedestrians were each reported as at-fault for nearly one-third of all collisions. Nearly 30 percent of recorded collisions do not identify a party at-fault.

Table 4-4 Pedestrian Collisions by Party at Fault

Party at Fault	Collisions	Percent of Total
Driver	31	36%
Not Stated	24	27%
Parked Vehicle	1	1%
Pedestrian	31	36%
Total	**87**	**100%**

Table 4-5 identifies the primary collision cause for the reported pedestrian-involved collisions. The leading cause was attributed to pedestrian violations, which occurred in approximately 23 percent of the pedestrian-involved collisions. The second-most frequent cause of collision was “pedestrian right-of-way violation”, and “other hazardous movement”.

Table 4-5 Primary Pedestrian Collision Cause

Primary Collision Cause	Collisions	Percent of Total
Auto R/W Violation	8	9%
Improper Turning	5	5%
Not Stated	8	9%
Other	1	1%
Other Hazardous Movement	16	18%
Ped R/W Violation	16	18%
Pedestrian Violation	20	23%
Traffic Signals and Signs	3	3.5%
Unsafe Speed	7	8%
Unsafe Starting or Backing	3	3.5%
Total	***87***	***100%***

4.1.3 PEDESTRIAN ENVIRONMENT QUALITY EVALUATION (PEQE)

The Pedestrian Environment Quality Evaluation (PEQE) represents a data-driven methodology for assessing pedestrian facilities. An overview of the methodology used to calculate PEQE scores, including required inputs and scoring used, is provided in **Section 2.1.** Locations which are evaluated include roadway segments, intersections, and mid-block crossings within the pedestrian study area. **Appendix B** includes the existing inputs used for PEQE analysis.

PEQE Roadway Segments Analysis

The data inputs for PEQE roadway segments analysis include horizontal buffer, lighting, a clear pedestrian zone, and the posted speed limit. **Table 4-6** summarizes the PEQE analysis results for sidewalks along roadway segments within the pedestrian study area. As shown, about half of the pedestrian facilities currently score as "medium-quality" and more than half of the pedestrian facilities are "low quality". No facilities were identified as "high-quality".

Many of the roadway segments within the pedestrian study area are located along high-speed roadways without a buffer between the travel lanes and the sidewalk to achieve the horizontal clearance points. Providing landscaped buffers, buffered bike lanes, or parking could increase the PEQE scores of several pedestrian facilities. Additionally, many facilities did not receive clear zone points due to signs, light or utility poles, transit stop benches or mailboxes obstructing the 5-foot clear zone, resulting in 0 points. Relocating these obstructions outside of the 5-foot clear zone would improve the quality of these facilities. Lastly, only about one-third of the segments analyzed satisfied requirements for lighting. Installing additional street lights along these pedestrian facilities would also improve the quality of the environment for pedestrians.

Table 4-6 Summary of PEQE Analysis for Segments within Pedestrian Study Area

PEQE Score	Total Length (feet)	Percent of Study Area Facilities
High	0	0%
Medium	217,516	45.9%
Low	256,456	54.1%
Total	***473,972***	***100%***

PEQE Intersection Analysis

The PEQE intersection analysis evaluates physical features that serve as safety mechanisms, operational features, compliance with Americans with Disabilities Act (ADA) for curb ramps, and intersection traffic control, as they relate to the pedestrian environment.

Table 4-7 summarizes the PEQE analysis results for intersections within the pedestrian study area. The evaluation indicates that 59-percent of crossings in the community currently exhibit medium-quality conditions, 31-percent of crossings exhibit low-quality conditions, and 10-percent of the crossings are currently prohibited. There is one high-quality facility (<1-percent) at the pedestrian bridge over Black Mountain Road on the north side of Galvin Avenue.

Currently, the community of Mira Mesa does not provide any curb extensions, pedestrian lead intervals, or raised crosswalks. Very few of the intersections studied contain "No Turn on Red" signs, enhanced pedestrian signs, or pedestrian countdown timers. Approximately one third of the intersections provide high-visibility crosswalks and/or advanced limit lines, and less than half of the intersections have curb ramps that

meet ADA requirements. Most crossings exhibiting low-quality conditions are located along residential areas such as Calle Cristobal/Sorrento Valley Boulevard and Gold Coast Drive. Some employment areas such as Miramar Road and Lusk Boulevard also exhibit low-quality conditions at crossings. Upgrading curb ramps to meet ADA standards, installing high-visibility crosswalks and advanced limit lines, or providing any of the pedestrian crossing enhancements discussed would improve the PEQE score at the pedestrian study area intersections.

Table 4-7 Summary of PEQE Analysis for Intersections within Pedestrian Study Area

PEQE Score	Number of Crossings	Percent of Study Area Facilities
High	1	<1%
Medium	283	59%
Low	146	31%
Prohibited	46	10%
Total	***476***	***100%***

PEQE Mid-Block Crossing Analysis

The PEQE mid-block crossing analysis is similar to the intersection analysis which evaluates physical features of the crossing such as high visibility crosswalks, bulb outs, median refuge for pedestrians, and ADA compliant curb ramps. The traffic control points vary from the intersection analysis, and awards one point for a pedestrian activated warning device such as in-pavement lighting or pedestrian activated flashing beacon, or two points for a signal or Pedestrian Hybrid Beacon (PHB).

The Mira Mesa community has one mid-block crossing in the pedestrian study area that was analyzed along Barnes Canyon Road near Scranton Road. This crossing is classified as a low-quality facility but could be improved to medium-quality by upgrading the north side ramp to be ADA compliant, constructing bulb outs, and/or providing a raised pedestrian refuge in the median. The only way to achieve a high-quality classification would be to upgrade the RRFB to a PHB.

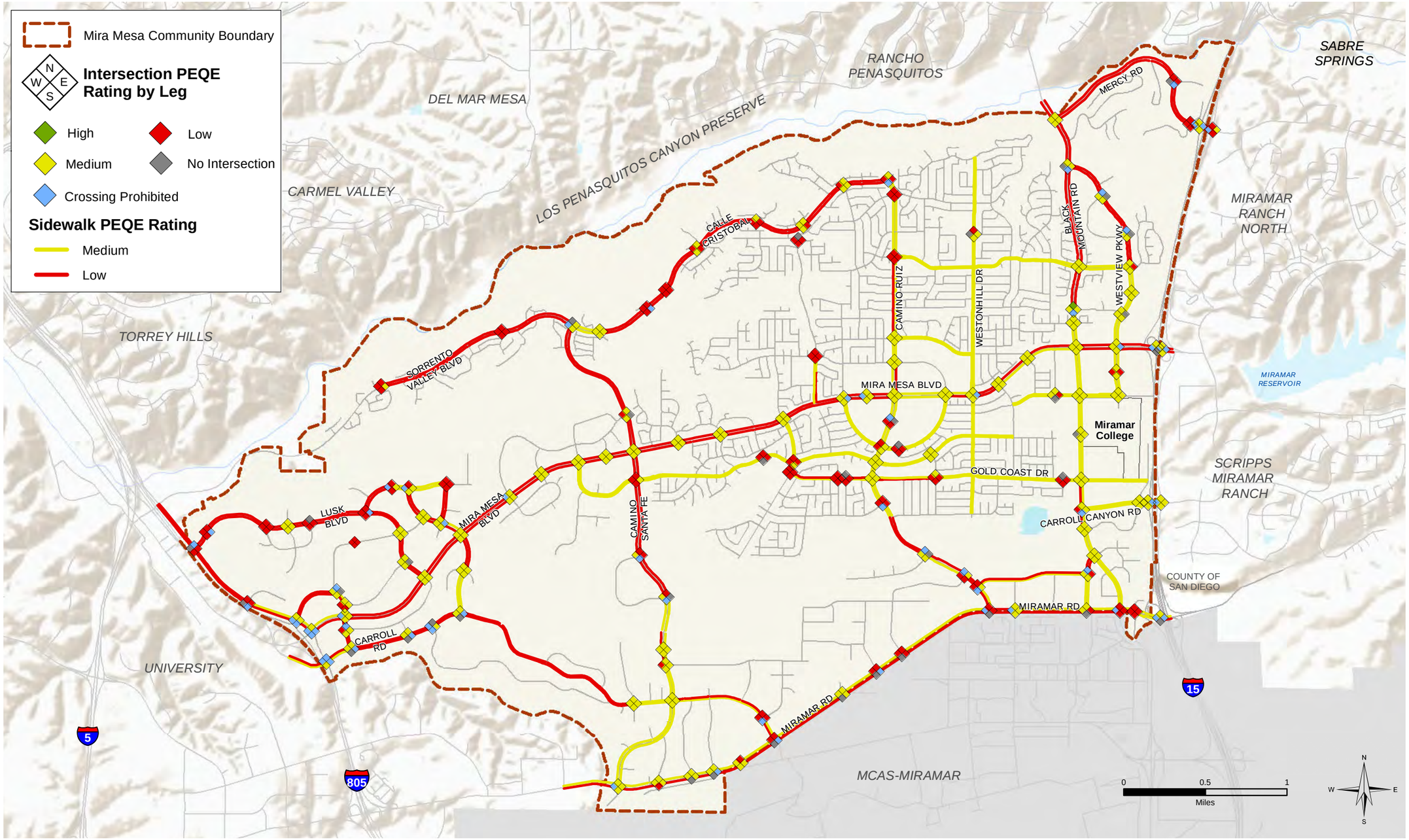
PEQE Analysis Results

The results of the PEQE analyses are presented in **Figure 4-8**. As shown, roadway segments exhibiting low-quality pedestrian conditions are generally shown along major arterial roadways that have little or no adjacent development. Roadways exhibiting medium-quality conditions are generally found along roadways with adjacent residential and commercial activity.

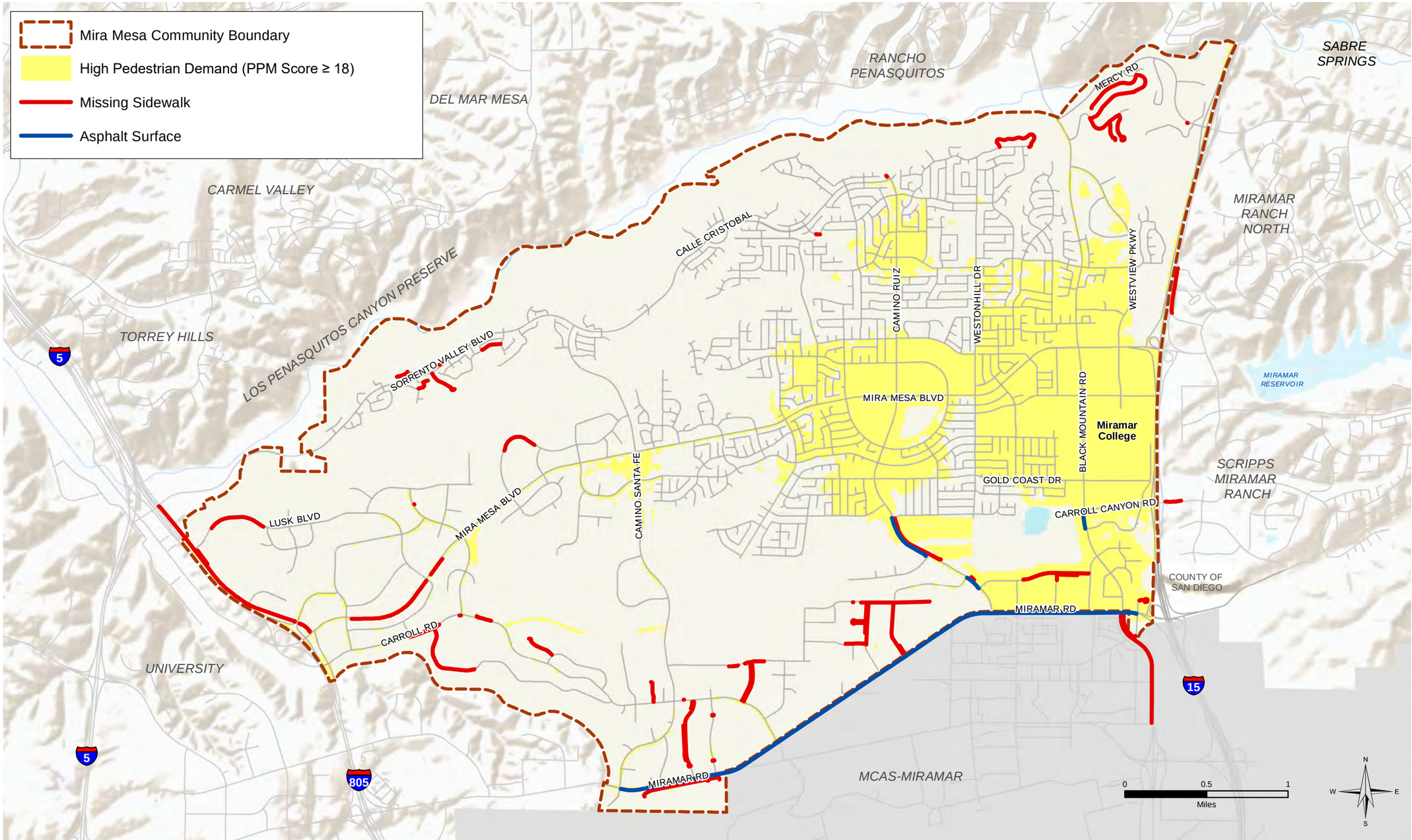
Another quantifiable pedestrian environment analysis is identifying the locations of missing sidewalks within the community. The identified locations that are missing sidewalks within Mira Mesa are shown in **Figure 4-9**. Missing sidewalk includes existing raised sections of asphalt along roadways such as the south side of Miramar Road, segments of the west side of Camino Ruiz between Jade Coast Drive and Miramar Road, and the west side of Black Mountain Road north of Maya Linda Road. The length (in feet) of the missing sidewalks along roadway segments within the pedestrian study area is summarized in **Table 4-8**.

Table 4-8 Summary of Missing Sidewalks within or Providing Access to the Pedestrian Study Area

Item	Length (feet)
Missing Sidewalk	61,715
Asphalt Sidewalk	20,838



Existing Pedestrian Environmental Quality Evaluation (PEQE) Rating (Pedestrian Study Area)



Locations with no Sidewalks

4.1.4 PEDESTRIAN NETWORK CONNECTIVITY

The level of connectivity at each pedestrian study intersection was assessed using a travelshed analysis. The methodology for calculating the Pedestrian Connectivity Ratio is described in detail in **Section 2.1**, and utilizes the formula shown below. Note that a higher ratio is associated with better overall connectivity at the intersection.

$$\frac{\text{Land Area Accessible within a 0.5 mile walkshed (acres)}}{\text{Land Area Accessible within a 0.5 mile crow flies buffer (acres)}}$$

The pedestrian connectivity ratio for each intersection within the pedestrian study area is shown in **Table 4-9** and illustrated in **Figure 4-10**. As shown, there are many locations in the community that have poor connectivity (<30%). This is a result of the canyons that run through the community, limiting options for linear connections for all modes of travel. The high connectivity areas are found in the residential areas of the community where there is more robust roadway connections that provide access to the houses.

Improving connectivity within the Mira Mesa community will be challenging. There will be some increased connectivity with the development of the Carroll Canyon Road extension. Other connections will require significant infrastructure – most likely raised bridges – and there will be limited places that can or should be realistically accommodated for, especially when it comes to funding and environmental sensitivity. New pathways bisecting larger developments in areas of change should be incorporated to avoid large superblocks and provide additional connectivity options.

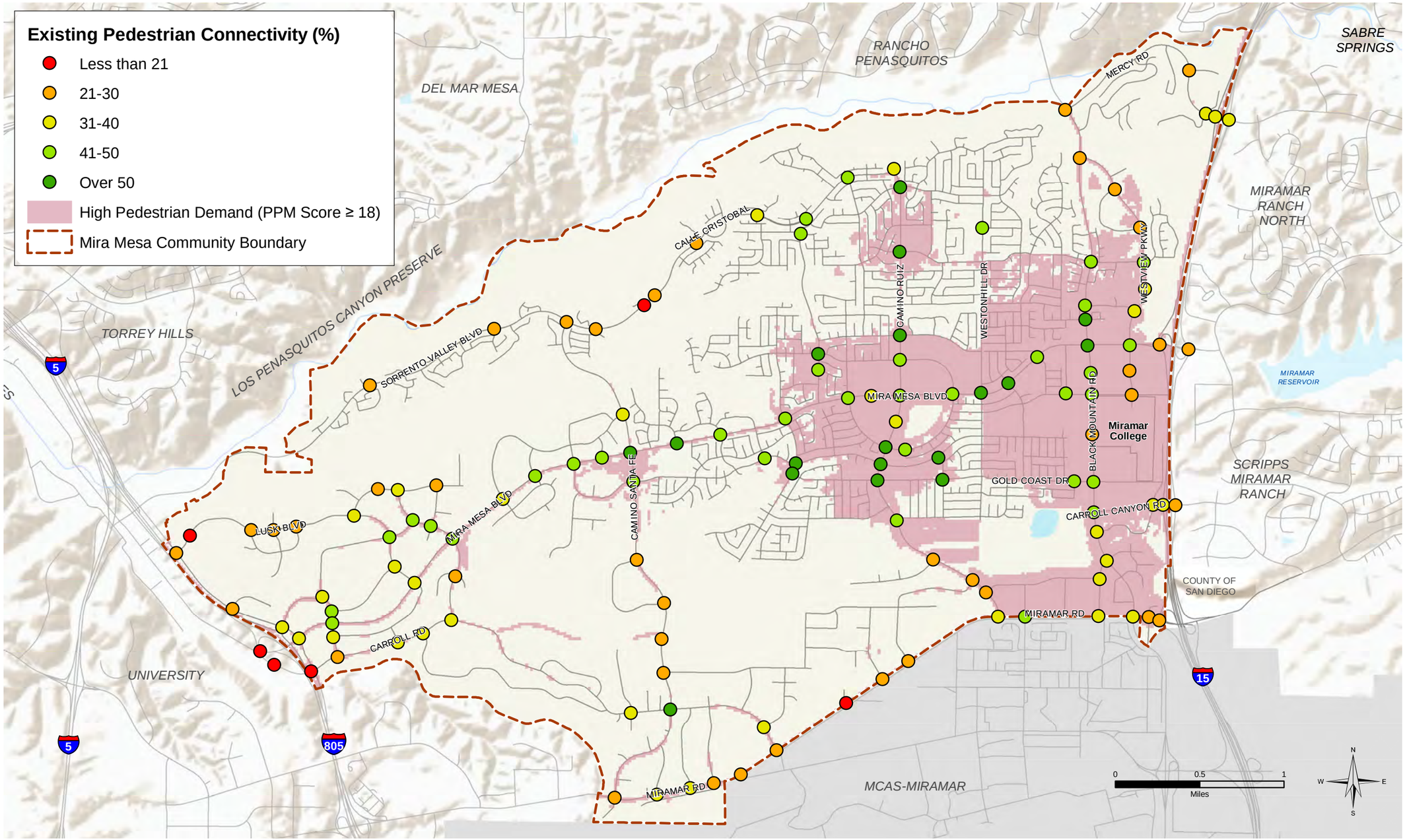
Table 4-9 Pedestrian Connectivity Ratio at Pedestrian Study Intersections

Intersection ID	Intersection Name	Pedestrian Connectivity Ratio
1	Ivory Coast Dr & Reagan Rd	45%
2	Vista Sorrento Pkwy & Lusk Blvd	23%
3	Vista Sorrento Pkwy & Directors Pl	21%
4	Vista Sorrento Pkwy & Mira Sorrento Pl	33%
5	Vista Sorrento Pkwy & Mira Mesa Blvd	39%
6	Sorrento Valley Rd & Carroll Canyon Rd/I-805 SB Ramps	20%
7	Juniper Park Ln & Sorrento Valley Blvd	26%
8	Sunny Mesa Rd & Sorrento Valley Blvd	22%
9	Camino Santa Fe & Sorrento Valley Blvd/Calle Cristobal	24%
11	Carroll Canyon Rd & I-805 DAR	17%
13	Office Driveways & Lusk Blvd	19%
14	W Wateridge Cir & Lusk Blvd	25%
15	Telesis Ct & Lusk Blvd	24%
16	E Wateridge Cir & Lusk Blvd	26%
17	Pacific Center Blvd & Lusk Blvd	31%
18	Lusk Blvd & Barnes Canyon Rd	46%
19	Lusk Blvd & Morehouse Dr	36%
20	Lusk Blvd & Mira Mesa Blvd	36%
21	Scranton Rd & Mira Sorrento Pl	36%
22	Scranton Rd & Morehouse Dr	41%
23	Scranton Rd & Mira Mesa Blvd	44%
24	Scranton Rd & Sorrento South Dwy/Oberlin Dr	39%
25	Scranton Rd & Carroll Canyon Rd	28%
26	Pacific Heights Blvd & Barnes Canyon Rd	44%
27	Wireless Wy & Pacific Center Blvd	28%
28	Pacific Heights Blvd & Pacific Center Blvd	34%
29	Pacific Mesa Blvd & Pacific Center Blvd	28%
30	Pacific Mesa Blvd & Pacific Heights Blvd	43%
31	Pacific Heights Blvd & Mira Mesa Blvd	43%
32	Pacific Heights Blvd & Cornerstone Ct	29%
33	Pacific Heights Blvd & Carroll Canyon Rd	34%
34	Lopez Point Dr & Calle Cristobal	21%
35	Camino Propico & Calle Cristobal	20%
36	Lopez Ridge Park Driveways & Calle Cristobal	23%
37	Camino Miranda & Calle Cristobal	25%
38	Windey Ridge Wy & Calle Cristobal	36%
39	Prairie Wood Dr & Calle Cristobal	44%
40	Avenida Del Gato & Calle Cristobal	41%
41	Camino Ruiz & Calle Cristobal	39%

Intersection ID	Intersection Name	Pedestrian Connectivity Ratio
42	Sequence Dr/Huennekens St & Mira Mesa Blvd	36%
43	Genetic Center/Steadman St & Mira Mesa Blvd	46%
44	Flanders Dr & Mira Mesa Blvd	48%
45	Viper Wy & Mira Mesa Blvd	44%
46	Camino Santa Fe & Mira Mesa Blvd	54%
47	Schilling Ave & Mira Mesa Blvd	51%
48	Aderman Ave & Mira Mesa Blvd	49%
49	Parkdale Ave & Mira Mesa Blvd	48%
50	Reagan Rd & Mira Mesa Blvd	49%
51	Mira Mesa Mall Driveways & Mira Mesa Blvd	33%
52	Camino Ruiz & Mira Mesa Blvd	45%
53	New Salem St/Marauder Wy& Mira Mesa Blvd	48%
54	Westonhill Dr & Mira Mesa Blvd	56%
55	Greenford Dr & Mira Mesa Blvd	56%
56	Westmore Rd/Marbury Ave & Mira Mesa Blvd	47%
57	Black Mountain Rd & Mira Mesa Blvd	54%
58	Westview Pkwy & Mira Mesa Blvd	43%
59	I-15 SB Ramps & Mira Mesa Blvd	24%
60	I-15 NB Ramps & Mira Mesa Blvd	23%
62	Business Access Road & Carroll Canyon Rd	17%
63	Youngstown Wy & Carroll Canyon Rd	31%
64	Nancy Ridge Dr & Carroll Canyon Rd	31%
65	Rehco Rd & Carroll Rd	36%
66	Camino Santa Fe & Carroll Rd	52%
67	Carroll Rd & Kenamar Dr	32%
68	Carroll Rd & Miramar Rd	26%
70	Camino Santa Fe & Miramar Rd	30%
72	Commerce Ave & Miramar Rd	37%
73	Production Ave & Miramar Rd	31%
74	Distribution Ave & Miramar Rd	30%
75	Miramar Wy & Miramar Rd	29%
76	AlesmithCt & Miramar Rd	11%
77	Dowdy Dr & Miramar Rd	26%
78	Chabot Dr & Miramar Rd	22%
79	Camino Ruiz & Miramar Rd	31%
80	Clayton Dr/Mitscher Wy & Miramar Rd	47%
81	Black Mountain Rd & Miramar Rd	33%
82	Kearny Villa Rd & Miramar Rd	34%
83	Kearny Mesa Rd & Miramar Rd	28%
84	I-15 SB Ramps & Miramar Rd	25%
86	Camino Santa Fe & Flanders Dr	46%

Intersection ID	Intersection Name	Pedestrian Connectivity Ratio
87	Dabney Dr & Flanders Dr	46%
88	Parkdale Ave & Flanders Dr	55%
89	Camino Ruiz & Flanders Dr	58%
90	San Ramon Dr & Flanders Dr	53%
91	Camino Santa Fe & Top Gun St	34%
92	Camino Santa Fe & Miratech Dr	25%
93	Camino Santa Fe & Summers Ridge Rd	26%
94	Camino Santa Fe & Unnamed Road	22%
95	Camino Santa Fe & Trade St	30%
96	Parkdale Ave & Gold Coast Dr	53%
97	Montongo St & Acama St	41%
98	Montongo St & New Salem St	54%
99	Montongo St & Goleta Rd	44%
100	Camino Ruiz & Aquarious Dr	53%
101	Camino Ruiz & Teresa Dr/Capricorn Wy	51%
102	Camino Ruiz & Westmore Rd	56%
103	Camino Ruiz & New Salem St	50%
104	Camino Ruiz & Driveway	39%
105	Camino Ruiz & Reagan Rd/Marauder Wy	55%
106	Camino Ruiz & Gold Coast Dr	59%
107	Camino Ruiz & Jade Coast Dr	42%
108	Camino Ruiz & Carroll Canyon Rd	29%
109	Camino Ruiz & Miralani Dr	30%
110	Camino Ruiz & Activity Rd	30%
113	San Ramon Dr & Gold Coast Dr	52%
114	Thanksgiving Ln & Gold Coast Dr	43%
115	Black Mountain Rd & Gold Coast Dr	44%
116	Westonhill Dr & Arctrus Wy	43%
117	Black Mountain Rd & Capricorn Wy	48%
118	Westview Pkwy & Capricorn Wy	42%
119	Black Mountain Rd & Mercy Rd	28%
120	Black Mountain Rd & Westview Pkwy	29%
121	Black Mountain Rd & Galvin Ave	49%
122	Black Mountain Rd & Gemini Ave	55%
123	Black Mountain Rd & Village Green/The Hills Driveways	41%
124	Black Mountain Rd & Hillery Dr	42%
125	Black Mountain Rd & Miramar College	25%
126	Black Mountain Rd & Carroll Canyon Rd	43%
127	Black Mountain Rd & Maya Linda Rd	40%
128	Black Mountain Rd/Kearny Villa Rd & Black Mountain Rd/Carroll Centre Rd	38%

Intersection ID	Intersection Name	Pedestrian Connectivity Ratio
129	Black Mountain Rd & Activity Rd	37%
130	Rickert Rd & Hillery Dr	42%
131	Westview Pkwy & Hillery Dr	29%
132	Mercy Rd & Kika Ct	21%
133	Alamenia Rd & Mercy Rd	34%
134	I-15 SB Ramps & Mercy Rd	36%
135	I-15 NB Ramps & Mercy Rd	38%
136	Westview Pkwy & Campus Point Dr N	23%
137	Westview Pkwy & Campus Point Dr S	30%
138	Westview Pkwy & Mira Lee Wy	36%
139	Westview Pkwy & Galvin Ave	36%
140	Westview Pkwy & Market Center Driveway	28%
141	Maya Linda Rd & Carroll Canyon Rd	31%
142	I-15 SB Ramps & Carroll Canyon Rd	31%
143	I-15 NB Ramps & Carroll Canyon Rd	30%



Existing Pedestrian Connectivity Ratio

PEDESTRIAN BARRIERS AND MISSING FACILITIES

As shown in Figure 4-1, sidewalks are provided along many of the roadways within the community. There are a few areas within the community that have missing facilities or barriers for pedestrian connectivity. **Figure 4-11** shows the pedestrian barriers identified in the community that are described below:

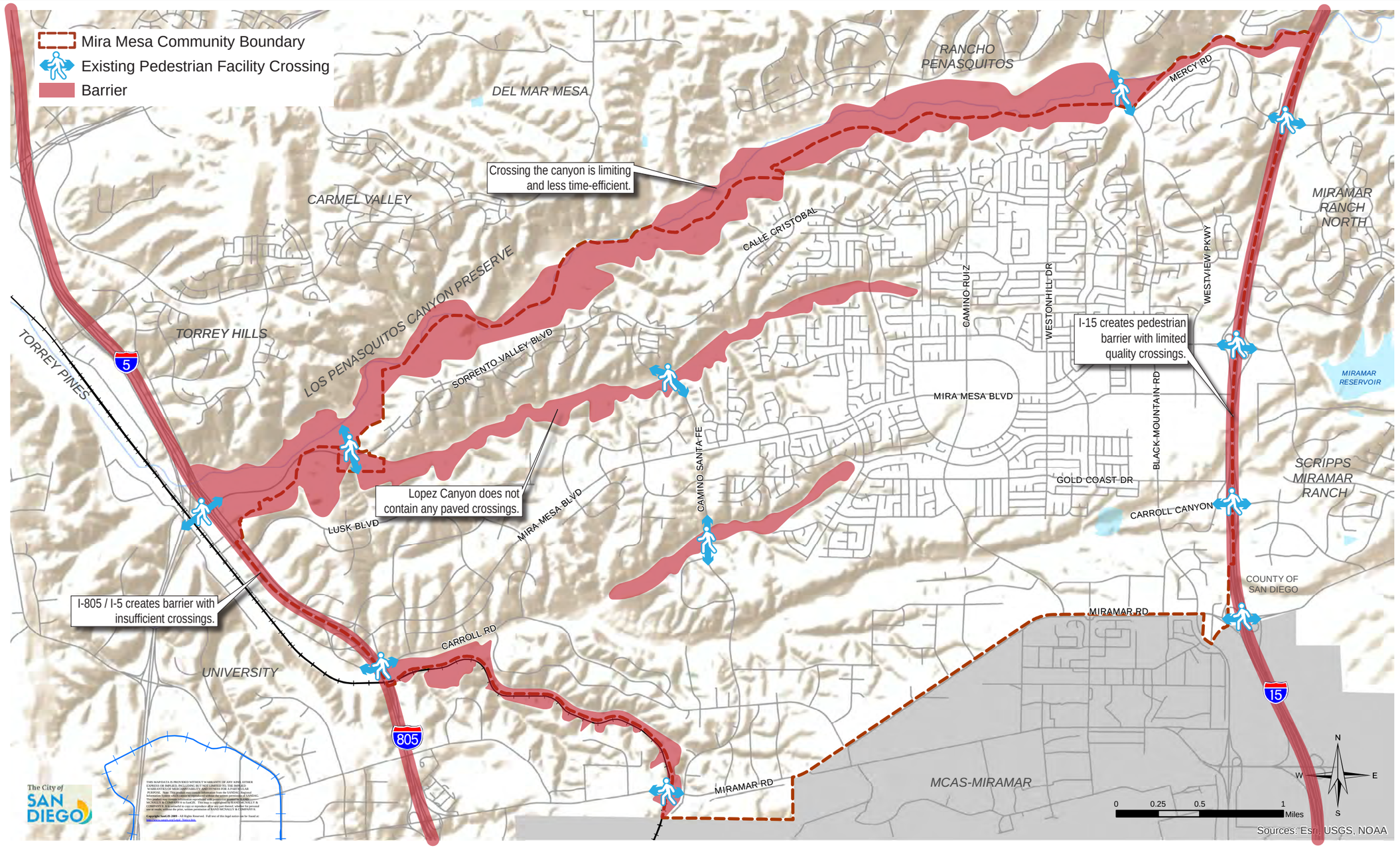
- *Los Peñasquitos Canyon Preserve*: There are several trails through Los Peñasquitos Canyon that pedestrians and bicyclists can use to travel east-west across the entire north side of the community or across the canyon. These trails are primarily used for recreational purposes. For a pedestrian on a non-recreation trip, the canyon can act as a barrier between Mira Mesa and communities to the north. Crossing the canyon requires traversing steep slopes that can be limiting to certain users and be less time-efficient than other modes of travel. The canyon connects to Black Mountain Road on the far east side of the community and Vista Sorrento Parkway on the far west side of the community; however, there are no crossings between Black Mountain Road and Vista Sorrento Parkway. The trail system crossing under Sorrento Valley Boulevard connects to the Lopez Canyon trail system approximately a half mile east of Vista Sorrento Parkway. Black Mountain Road currently provides the only paved crossing through the canyon, with sidewalks and Class II buffered bike lanes on both sides of the roadway.

- *Lopez Canyon*: There is also a trail through Lopez Canyon, which runs-east-west between Sorrento Valley Boulevard and Mira Mesa Boulevard on the west side of the community. This trail connects to the Los Peñasquitos trail under Sorrento Valley Boulevard, and to the intersection of Pacific Center Boulevard and Pacific Mesa Boulevard within the Sorrento Valley employment area. There are no paved crossings over Lopez Canyon creating a barrier from residences along Sorrento Valley Boulevard/Calle Cristobal and employment or schools south of the canyon near Mira Mesa Boulevard.

- *Interstate 805*: In general, the interstate acts as a barrier between land uses located east and west due to the limited crossing locations and undesirable crossings near high volumes of vehicles. This is typical with freeways as there are limited roadways that cross or intersect. The following roadways intersect with I-805; however, not all of these roadways provide a facility for pedestrians to cross, some provide sidewalks on only one side of the roadway:
    - Sorrento Valley Boulevard is the primary connection between the Sorrento Valley Station and the Mira Mesa community but provides facilities that are challenging for pedestrians and bicycles under I-805. The sidewalks are approximately 6 feet wide with various obstructions to the pedestrian clear zone, and little to no horizontal separation between high-speed vehicles and pedestrians. The bike lanes are 5 feet wide, including the gutter pan, start and stop abruptly, and do not provide guidance for navigating the Sorrento Valley Road intersection.
    - The I-5 ramps between Genesee Avenue and Sorrento Valley Road provide access to a separated bicycle facility in both directions along the west side of the I-5 freeway to connect the Sorrento Valley Station to the UCSD campus.
    - Mira Sorrento Place connects to Vista Sorrento Parkway at an intersection with I-805 northbound on and off ramps but does not cross I-805.
    - Mira Mesa Boulevard / Sorrento Valley Road crosses under I-805 as a secondary route connecting the Sorrento Valley Station and the community of Torrey Pines to Mira Mesa. The underpass provides pedestrian access on the north side only, with no horizontal separation from high-speed vehicle travel lanes, and no crossings across Mira Mesa Boulevard at Vista Sorrento Parkway.

- Carroll Canyon Road also crosses under I-805 with 8-foot sidewalk on the south side only, separated by 6-foot bike lanes. The HOV lane ramps for I-805 northbound and southbound intersect with Carroll Canyon Road.
- Miramar Road does not intersect with I-805 within the community boundary, however Miramar Road continues into La Jolla Village Drive within the University community and provides a 5-foot sidewalk along the north side.

- *Interstate 15*: While the number of locations where pedestrians can cross Interstate 15 is limited, there are pedestrian connections along each roadway crossing the freeway. The impact the freeway barrier has on pedestrians has been minimized by providing sidewalks on all four intersecting roadway crossings that provide connections between Mira Mesa and the adjacent communities to the east (Scripps Miramar Ranch, Miramar Ranch North, and Sabre Springs). However, the bicycle facilities crossing these roadways are all low-quality due to lack of separation from high speed and high volume of motorists.
  - Mercy Road / Scripps Poway Parkway crosses under I-15 with 5-foot sidewalks, and 5-foot bike lanes.
  - Mira Mesa Boulevard crosses under I-15 with 6-foot sidewalks, and no bicycle facilities
  - Carroll Canyon Road crosses over I-15 with 6-foot sidewalks and 8-foot shoulders that could be utilized by bicyclists, but striping is not provided. Bike lanes continue on the east side of I-15, but not on the west side within Mira Mesa.
  - Miramar Road crosses over I-15 with 5-foot sidewalks on both sides and 6 to 8-foot shoulders. West of Kearny Mesa Road there are 5 to 6 foot bike lanes as well as east of the I-15 at Pomerado Road in the eastbound direction.



Existing Pedestrian Barriers

4.2 BICYCLE MOBILITY

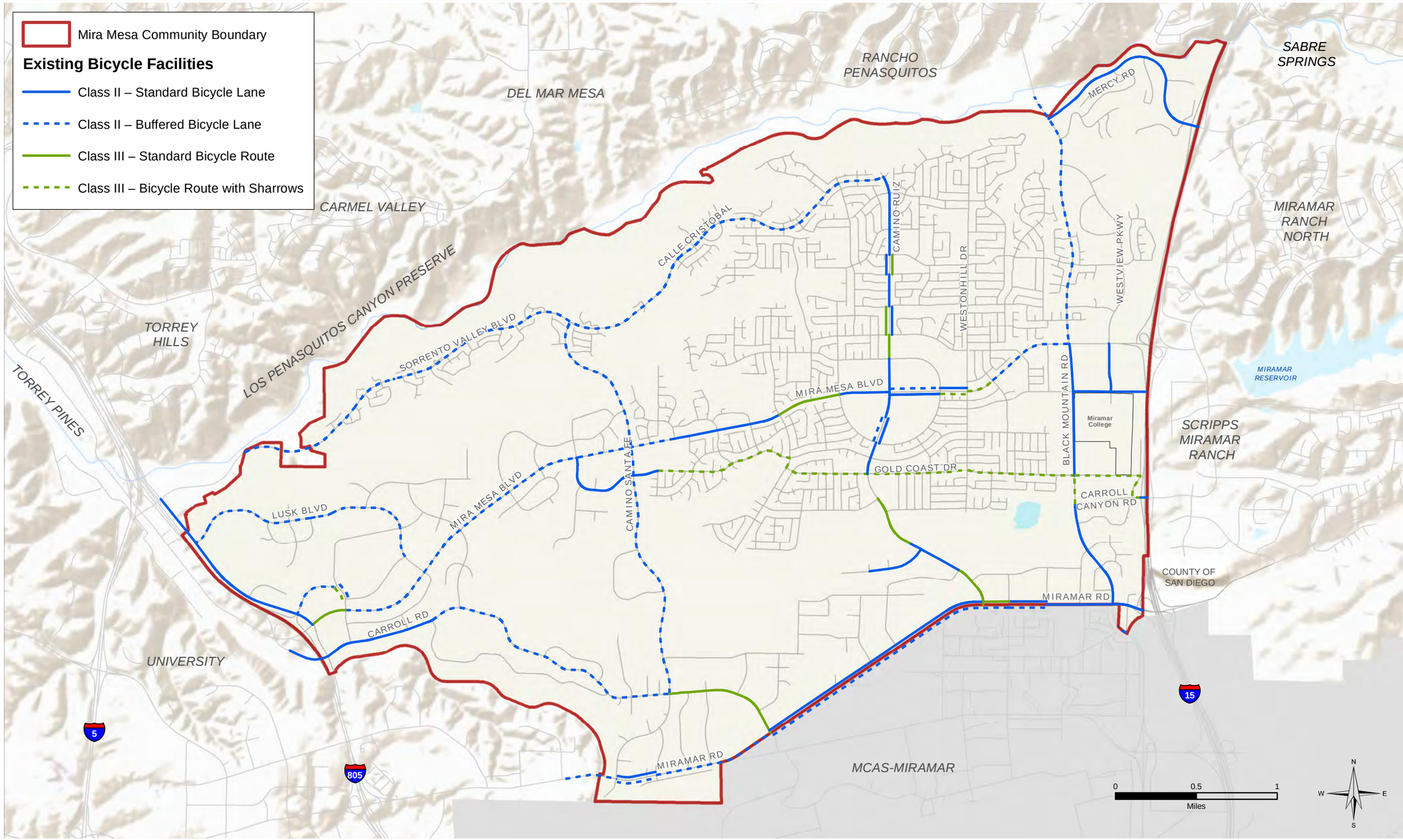
The City of San Diego has developed a network of designated Class I paths, Class II bike lanes, Class III bike routes as part of their Bicycle Master Plan efforts. A Class I facility is a bike path that provides for bicycles to travel on a paved right-of-way completely separated from any street or highway. A Class II facility is a bike lane that provides bicycles an exclusive lane of travel on a roadway separated by pavement markings. This facility can also include a painted buffer which may provide a separation from cyclists and vehicle travel lanes or parking lanes. A Class III facility is a bike route that provides shared use with motor vehicle traffic and is typically identified by signage and/or pavement markings. Class IV bikeways were introduced in 2014, which provide separated bicycle facilities within the roadway but protected from vehicle traffic by a vertical element of separation.

Figure 4-12 displays the location of the existing bvicycle facilities within the Mira Mesa community. The community has bike lanes along most of the major roadways in the community but does not provide many facilities beyond that. There are ways to get across the community using bike lanes, but this requires riding along busy roadways with high volumes and high speeds. Internal community facilities connecting residents to recreation or retail areas are minimal. Commute trip connections between transit stations and employment areas are provided on the primary roadways that vehicles would also use. This creates high levels of stress for most riders.

Bicycle connections are provided to adjacent communities to the west via the I-5 ramps and Miramar Road, to the north via Sorrento Valley Road and Black Mountain Road, to the south via Kearny Villa Road, and to the east via Mercy Road, Carroll Canyon Road, and Miramar Road.

The following section summarizes the existing bicycle environment in Mira Mesa using the following evaluations:

Demand	• Using existing turning movement count data • Based upon the Bicycle Demand Model (BDM) • Based upon census-based mode share data
Safety	• Using bicycle-related collision data for a recent five-year period
Quality	• Using Level of Traffic Stress (BLTS) analysis
Connectivity	• Using a bikeshed ratio evaluation • (Low-stress) Using combination of BLTS and bikeshed evaluations



Existing Bicycle Facilities

4.2.1 BICYCLE DEMAND

Bicycle demand was evaluated using the City of San Diego Bicycle Demand Model (BDM). The BDM has two demand components: intra-community and inter-community travel. Model inputs include population characteristics, bicycle trip attractors and generators, and proximity to land uses that are typically associated with higher rates of cycling activity. **Figure 4-13** displays the Bicycle Demand Model results for the Mira Mesa community with scoring relative to the scores within the community. The BDM process is described in more detail in **Section 2.2**.

The highest bicycle demand areas are concentrated near the Miramar College Transit Station, along Mira Mesa Boulevard and Miramar Road, and north-south connections between Mira Mesa Boulevard and Miramar Road. These roadways collect travel demand between attractors and generators in the community as there are few connections that traverse the community boundary. The area near Miramar College has high population and potential interaction between transit, employment, college, and recreation areas.

Bicycle demand is lowest in the large employment areas on the western half of the community. There are minimal interactions between the employers in this area, so travel is limited to commute traffic and it is not an easily accessible area with the current bicycle network.

The residential areas of the community experience relatively high demand, showing a need for investments in creating low-stress connections between residential areas and nearby recreation, retail, and schools.

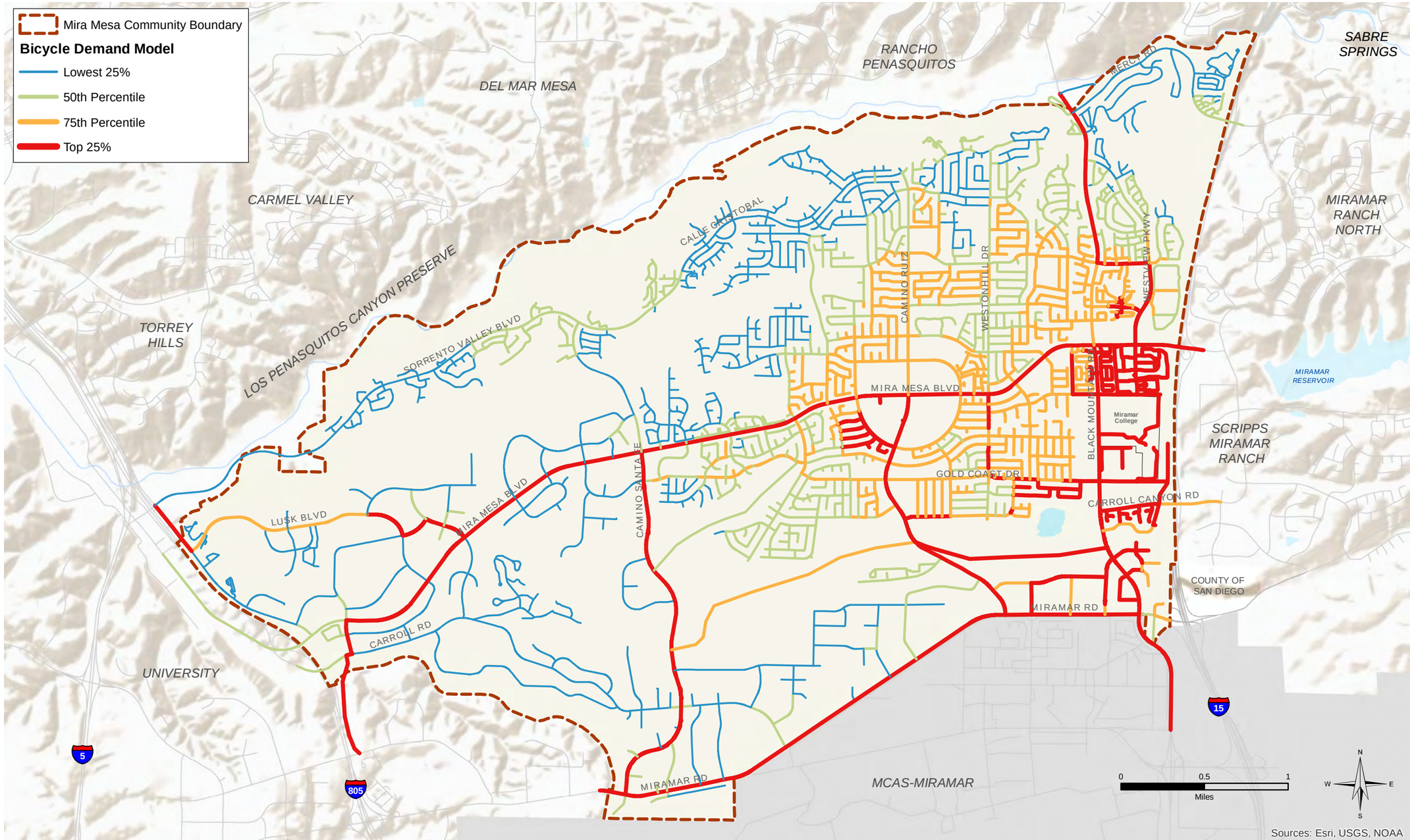
Bicycle commute mode share is another measure of where demand exists for bicycle infrastructure or where existing facilities are successfully accommodating some bicycle commutes. American Community Survey data, 2017 5-year estimates, were used to determine how the commute mode share in the Mira Mesa community compares to both the City of San Diego and the County of San Diego. **Table 4-10** presents the bicycle commute mode share comparison. The Mira Mesa community has an average bicycle mode share slightly higher than the City of San Diego and San Diego County.

Table 4-10 Bicycle Commute Mode Share Comparison

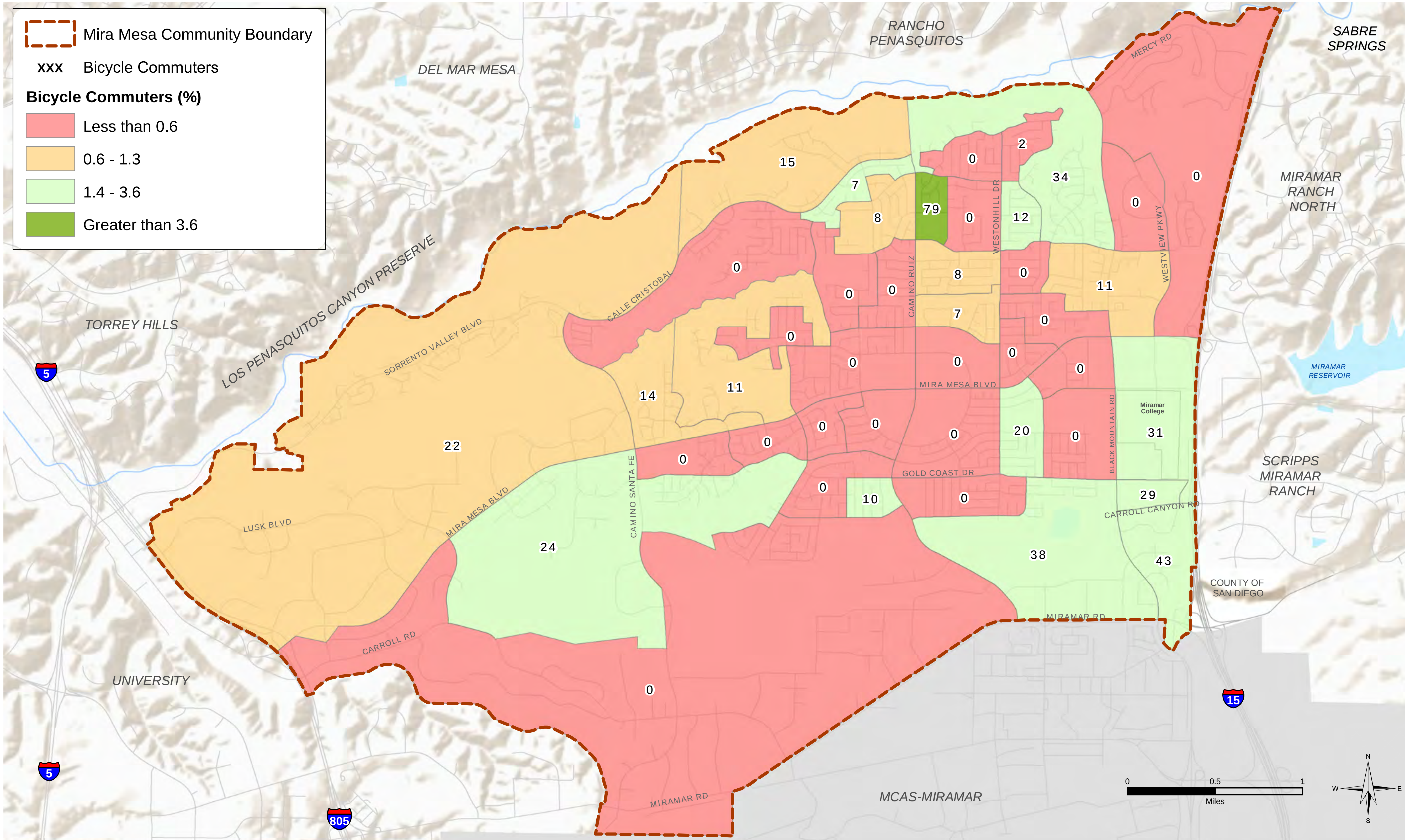
	Mira Mesa	City of San Diego	San Diego County
Total Bicycle Commutes	577	6,904	10,370
Total Workers	58,910	762,993	1,549,529
Bicycle Commute Mode Share	***1.0%***	***0.9%***	***0.7%***

Figure 4-14 displays bicycle commute rates and the total number of bicycle commuters by census block group throughout the Mira Mesa community. As shown, bicycle commute mode share is highest in the southeastern portion of the community and for the most part, tends to have higher mode shares as you go away from the center of the community. The highest commute mode share is shown near Camino Ruiz between Capricorn Way and Aquarius Drive where retail and multifamily residential developments are located.

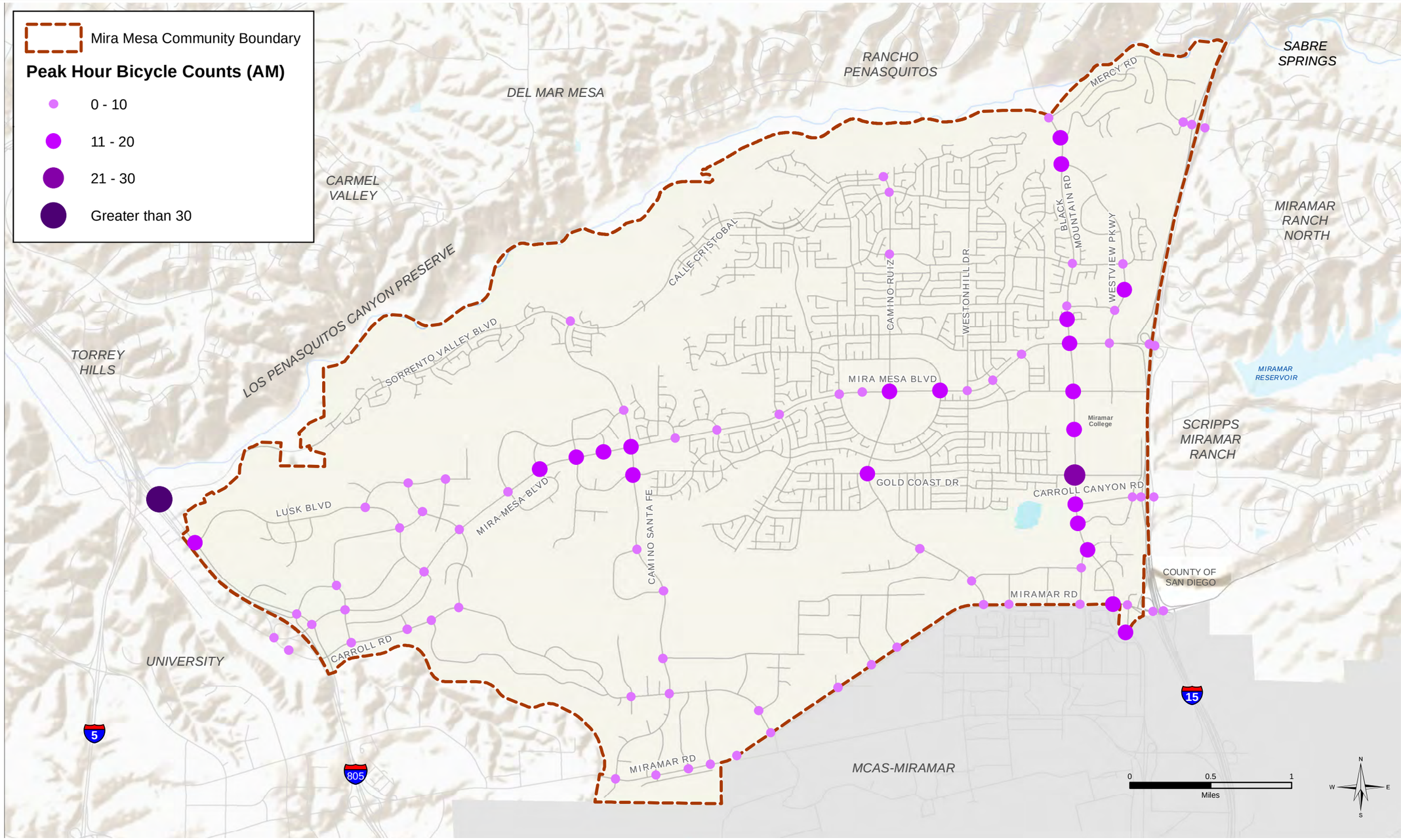
Figure 4-15 and **Figure 4-16** display the AM and PM peak hour bicycle movements observed at the 92 study intersections. Overall observed bicycle volumes were slightly greater during the PM peak hour. Higher bicycle volumes were observed near Miramar College, and along Mira Mesa Boulevard and Black Mountain Road.



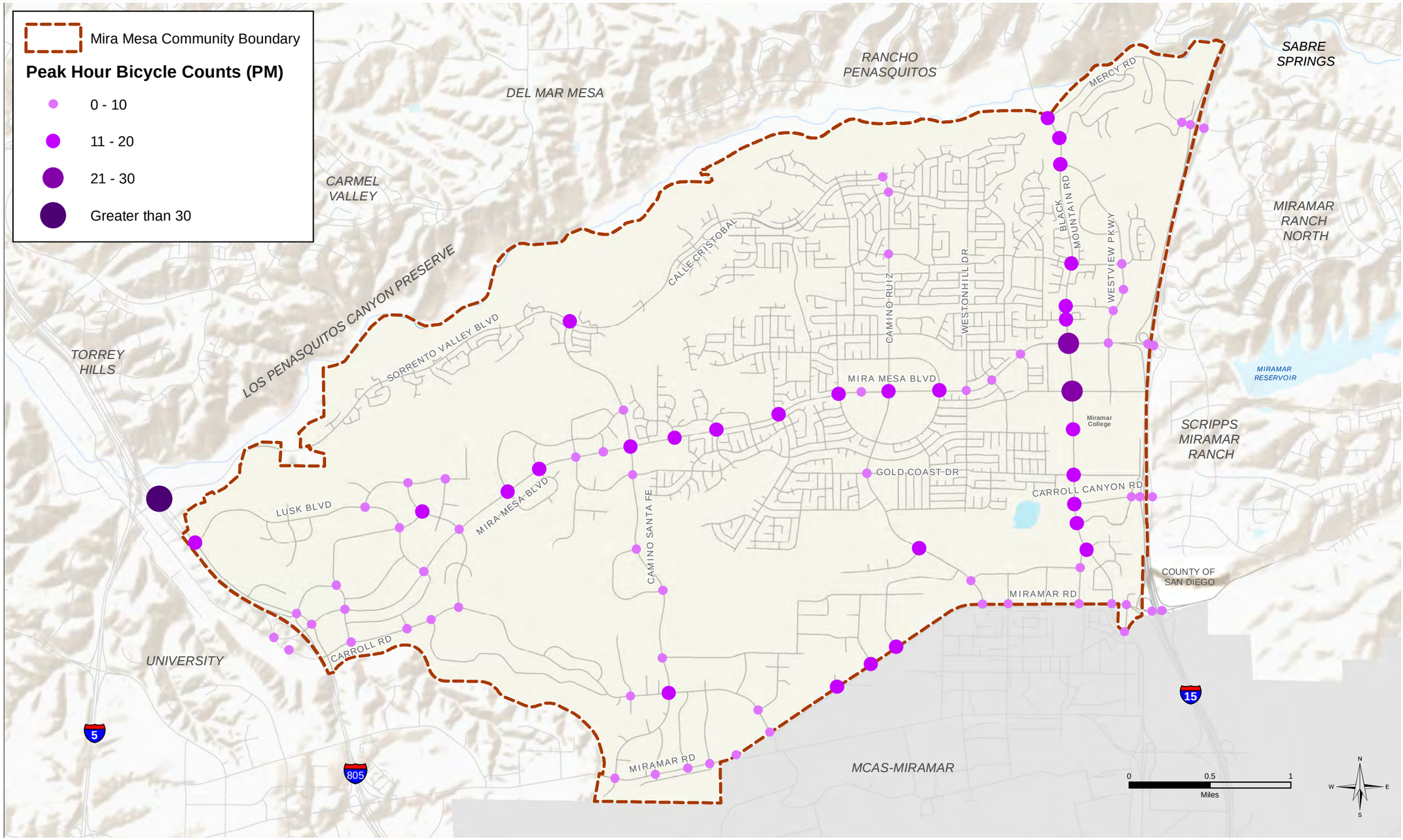
Bicycle Demand



Bicycle Commute Mode Share by Census Block Group



Bicycle Peak Hour Volumes (AM Peak)



Bicycle Peak Hour Volumes (PM Peak)

4.2.2 BICYCLE SAFETY

Between October 2012 and September 2017, there were a total of 94 reported collisions involving bicycles within the Mira Mesa community. In the State of California, collision reports must be generated for any collision where: property damage equals or exceeds 750 dollars, city property is involved, someone is injured, a fatality occurs, a pedestrian or cyclist is involved, or it is a hit-and-run or DUI collision. It is important to note some bicycle collisions may go unreported.

Reported bicycle-involved collision data within the vicinity of the community planning area are illustrated in **Figure 4-17**. Additional information on the collisions is provided in **Appendix A**.

Most locations have isolated collisions, while some intersections or mid-block locations have identified multiple collisions in the five-year period. Locations within 350 feet of an intersection were considered intersection-related, and bundled with the intersection crashes. Mid-block crash locations were evaluated on a case-by-case basis, and bundled if they occurred within close proximity of each other with similar roadway characteristics and crash trends. The locations with three or more collisions are identified in **Table 4-11.**

Table 4-11 Most Frequent Bicycle Collision Locations

Intersection	Collisions
Mira Mesa Blvd & Camino Ruiz	5
Mira Mesa Blvd & Westview Pkwy	4
Mira Mesa Blvd & Westmore Rd/Marbury Ave	3
Miramar Rd East of Commerce Ave / Milch Rd	3

The location types of the reported bicycle-involved collisions are summarized in **Table 4-12**. Types include intersection, mid-block, and approaching/departing locations. Similar to pedestrian-involved collisions, over two-thirds of all bicycle-involved collisions occurred at intersections.

Table 4-12 Bicycle Collisions by Location Types

Collision Location Type	Collisions	Percent of Total
Approaching/Departing	19	20%
Intersection	64	68%
Midblock	11	12%
Total	***94***	***100%***

Table 4-13 summarizes the collisions by the party at fault, as reported for the collision. Bicyclists were reported as “at-fault” in 30 percent of all collisions. Drivers were reported as “at-fault” in 28 percent of all collisions. All other collisions did not state the party at fault or were listed as “other.”

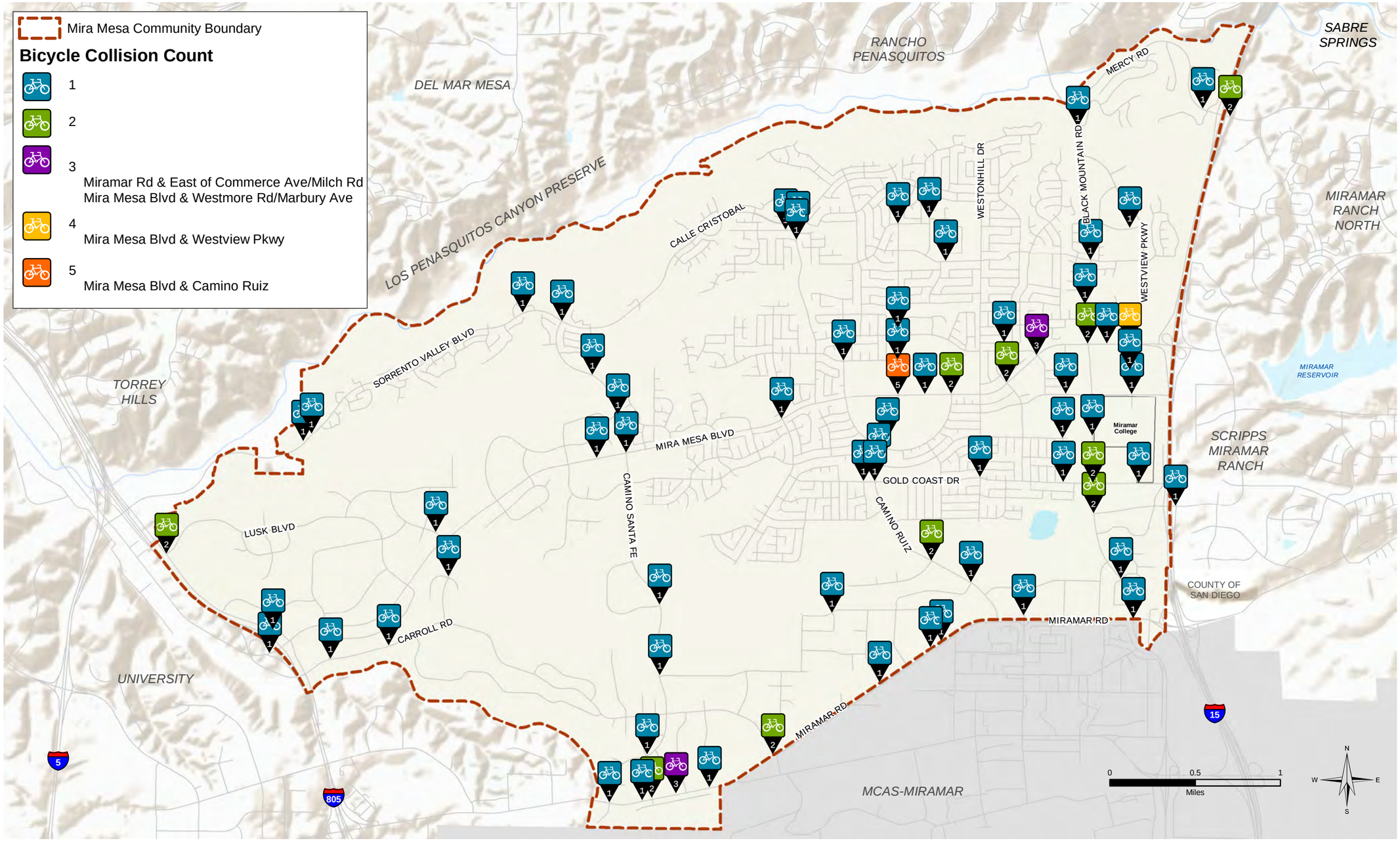
Table 4-13 Bicycle Collisions by Party at Fault

Party at Fault	Collisions	Percent of Total
Bicyclist	28	30%
Driver	26	28%
Not Stated	26	28%
Parked Vehicle	1	1%
Other	13	14%
Total	***94***	***100%***

Table 4-14 displays the primary causes for bicycle involved collisions. As shown in the table, the top cause for bicycle-involved collisions was unsafe speed, followed by auto right-of-way violation and improper turning.

Table 4-14 Primary Bicycle-Involved Collision Cause (2012-2017)

Primary Collision Cause	Number of Collisions	Percent of Total Bicycle Collisions
Auto R/W Violation	18	19%
Impeding Traffic	1	1%
Improper Passing	1	1%
Improper Turning	18	19%
Not Stated	7	5%
Other	2	2%
Other Hazardous Movement	4	4%
Other Than Driver	3	3%
Pedestrian Violation	2	2%
Traffic Signals and Signs	3	3%
Unknown	1	1%
Unsafe Lane Change	4	4%
Unsafe Speed	19	20%
Unsafe Starting or Backing	1	1%
Wrong Side of Road	10	11%
Total	***94***	***100%***



Bicycle Collisions (Oct 2012 to Sep 2017)

4.2.3 BICYCLE FACILITY QUALITY

Bicycle Level of Traffic Stress (BLTS) analysis was completed to summarize the quality of bicycle facilities in the community. BLTS evaluates the network of streets and bicycle paths according to the quality of the bicycling experience, based on an evaluation of surrounding roadway and traffic conditions. LTS is a widely accepted measure developed by the Mineta Transportation Institute at San Jose State University, and detailed in the 2012 report "Low Stress Bicycling and Network Connectivity."[11]

The report also draws from work done by the City of Portland, Oregon, to classify bicycle riders into four types based on their tolerance for traffic.[12] **Table 4-15** defines the four LTS levels in terms of suitable rider types and the cycling experience. A score of 1 represents the lowest level of stress/highest suitability, while a score of 4 represents the highest level of stress/least suitability.

Table 4-15: Levels of Traffic Stress

Level of Traffic Stress	Suitable Rider Type
LTS 1	"Interested but Concerned" - Adults and Children
LTS 2	"Interested but Concerned" - Adults Only
LTS 3	"Enthused and Confident" - Adults Only
LTS 4	"Strong and Fearless" - Adults Only

Source: "Low Stress Bicycling and Network Connectivity," Mineta Transportation Institute, p. 14.

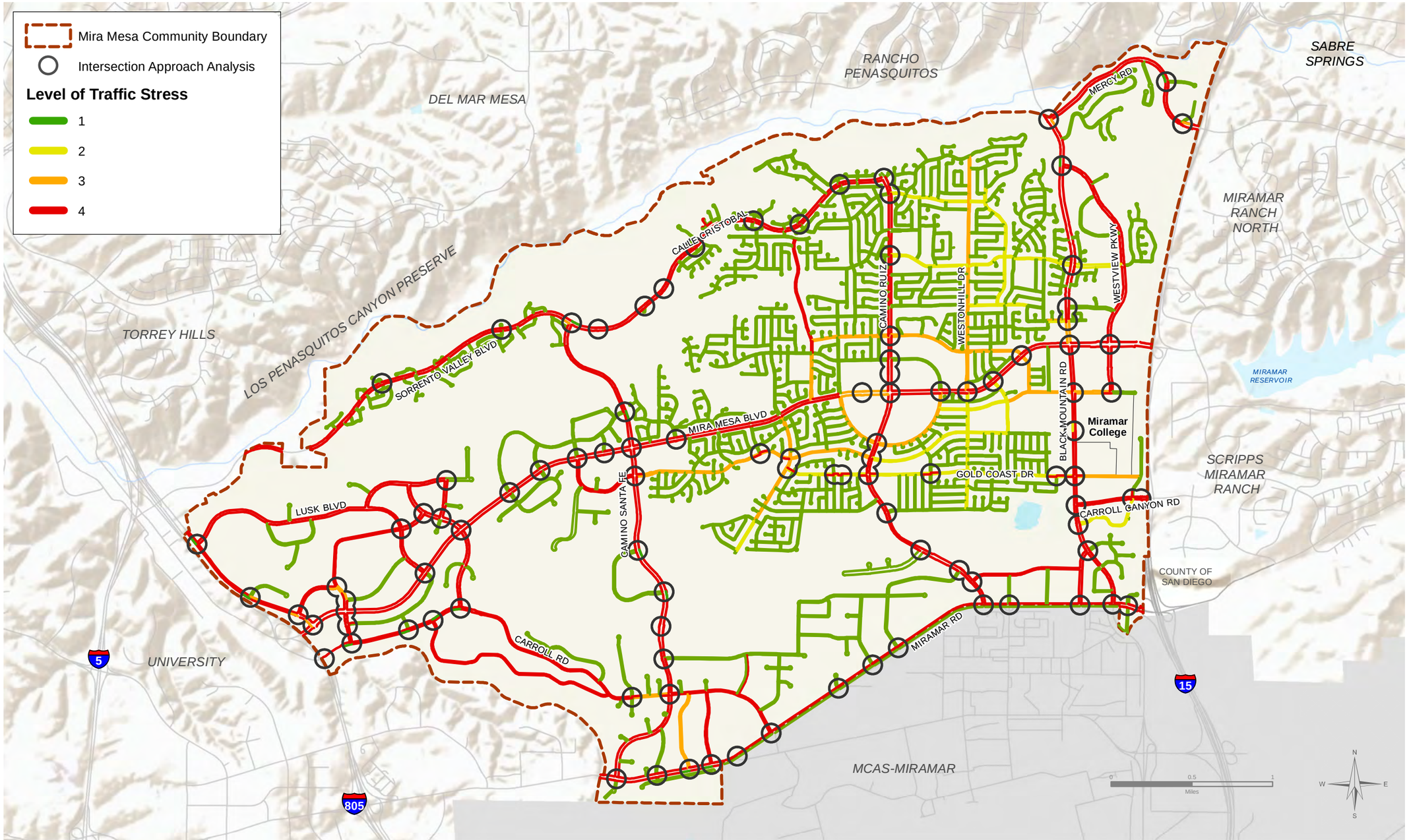
Figure 4-18 shows the LTS score for each direction of the roadways in Mira Mesa. **Appendix C** includes the detailed inputs used for BLTS analysis.

Increased number of travel lanes and higher speeds result in a more stressful experience and is shown in the BLTS scoring. As seen in the figure, the majority of the Mira Mesa community has pockets of low stress bicycle facilities that are isolated from the rest of the community due to high speed and high traffic roadways creating a stress barrier for cyclists. Miramar College and transit station are surrounded by high-stress facilities, while the demand is greatest in this area. The community does not have any east-west or north-south corridors that offer low-stress options for bicyclists to access destinations for recreation, leisure, or employment.

Mira Mesa Boulevard creates a high-stress barrier between the north and south portions of the community with only high-stress crossings. Similarly, Camino Santa Fe, Camino Ruiz, and Black Mountain Road are all high-stress routes that further separate areas of the community and prevent bicyclists from accessing destinations comfortably. In addition, all access points in and out of the community are identified as high-stress, and discourage regional travel by bike.

Segments of Gold Coast Drive, Hillery Drive, Capricorn Way, and Aquarius Drive are classified as LTS 2 and allow comfortable short-haul trips between residences, parks and schools. However, portions of these segments are broken up by high-stress intersection crossings that could be upgraded to create longer comfortable routes for bicyclists.

[11] http://transweb.sjsu.edu/project/1005.html
[12] https://www.portlandoregon.gov/transportation/44597?a=237507



Existing Bicycle Level of Traffic Stress

4.2.4 BICYCLE NETWORK CONNECTIVIY

Bicycle network connectivity can be measured by the Bikeshed Ratio. This is a metric which compares the area reachable via the bike network within a given distance, often known as the bikeshed, to the "as-the-crow-flies" area, which is a circular coverage area with a radius of the same given distance. This measure indicates how connected and accessible a given area is within the bicycle network. Constraints on connectivity include natural features, such as canyons or rivers, and street grid inefficiencies. Therefore, a score of 65 percent is considered a near maximum score, while a score over 50% is considered ideal.

The methodology for the Bikeshed Ratio is described in **Section 2.2**. The analysis focuses on the area between 0.25 miles and 1.0 mile from the point being assessed. The inner area between 0 miles and 0.25 miles from each point was removed, as it is assumed to be completed by pedestrian trips. This analysis examined 135 points at study area intersections to provide a comprehensive picture of community bicycle connectivity.

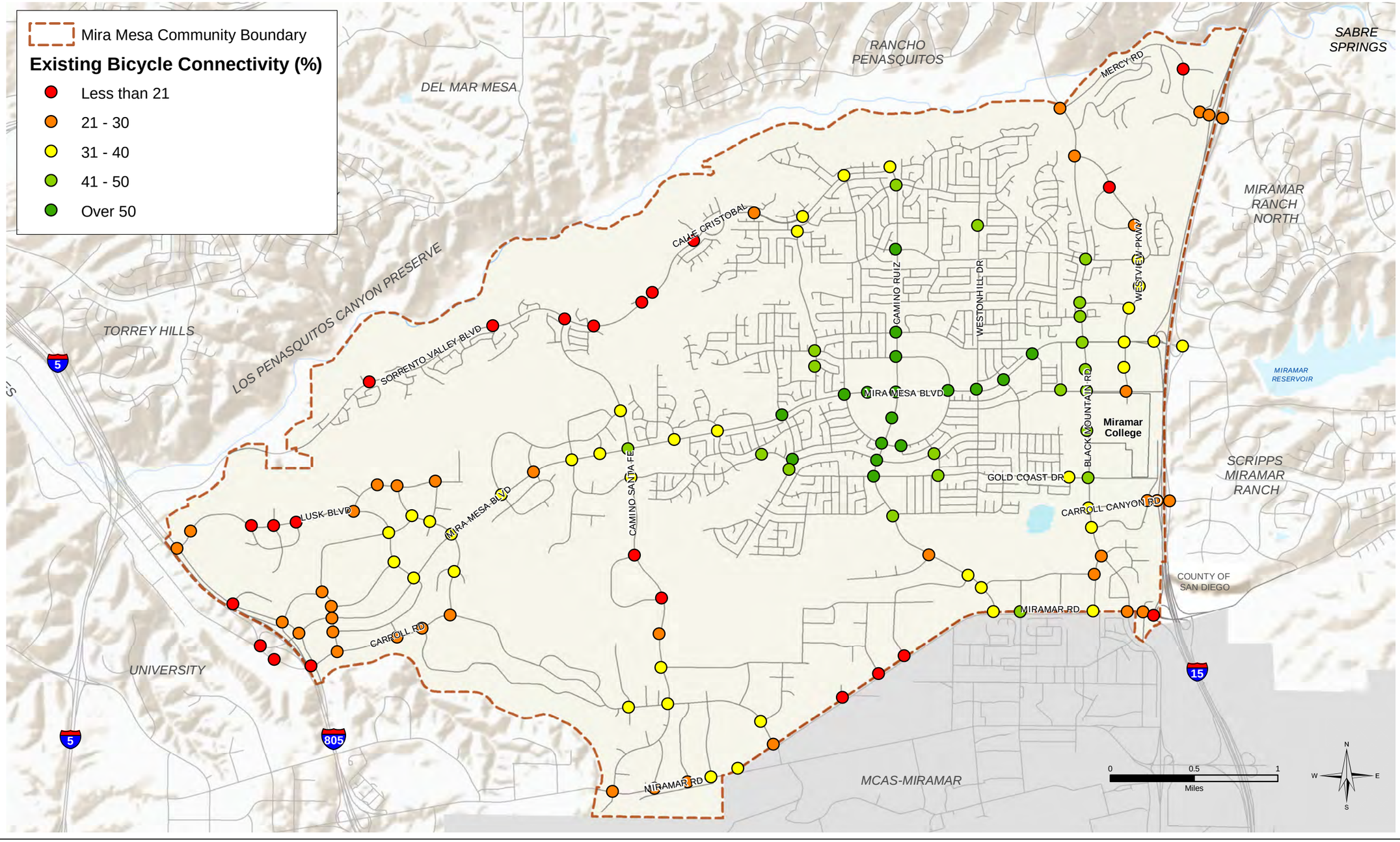
Results from the analysis are displayed in **Figure 4-19** with individual bicycle connectivity ratios for each intersection shown in **Table 4-16**. High connectivity is found in the center of the community near the intersection of Mira Mesa Boulevard and Camino Ruiz, where roadway connections are more abundant. Outside of the residential areas of the community, bicycle connectivity ratios become lower, as the roadway connections are limited by canyons. The future Carroll Canyon Road extension will provide some increased connectivity to the southern portion of the community.

Bicycle connectivity can also be assessed by the ability for connections to be made on low stress routes, which are those characterized as LTS 1 or LTS 2. The analysis determined how each traffic analysis zone (TAZ) in the community is connected via the low stress routes. The equation below represents the ratio's calculation:

$$\frac{\text{Number of TAZs accessible via low-stress routes (LTS 1 and 2 only)}}{\text{Number of TAZs accessible via all routes}}$$

The results of the analysis are shown in **Figure 4-20**. As seen, there are a number of TAZs where there is no accessibility via low-stress bicycle facilities. These areas are completely isolated due to adjacency to canyons and high-stress facilities along Lusk, Mira Mesa Boulevard, Camino Santa Fe, and Miramar Road where there are no alternative route options. The residential areas of the community are pretty well connected with low-stress alternatives because of the availability of residential street, which have lower speeds and less vehicles. Key crossings will need to be identified to allow low-stress bicycle crossing of the major roadways in these areas.

Mira Mesa's canyons limit some opportunities for increasing low-stress connections, as bikes will need to travel on high-speed, wide roadways for certain portions. Class IV facilities will be considered along these portions, but are not likely to be feasible at most locations because of limited right-of-way availability with the adjacent terrain. The barriers from high-stress facilities currently limit the interaction between different areas of the community. For example, getting to and from the industrial area on Miramar Road from adjacent communities or the residential area of Mira Mesa currently requires travel on a high-stress facility. Similarly, access to and from the western portion of the community (which is a major employment center for the community) has many high-stress bicycle facilities with no alternative options.



Existing Bicycle Network Connectivity (Bikeshed Ratio)

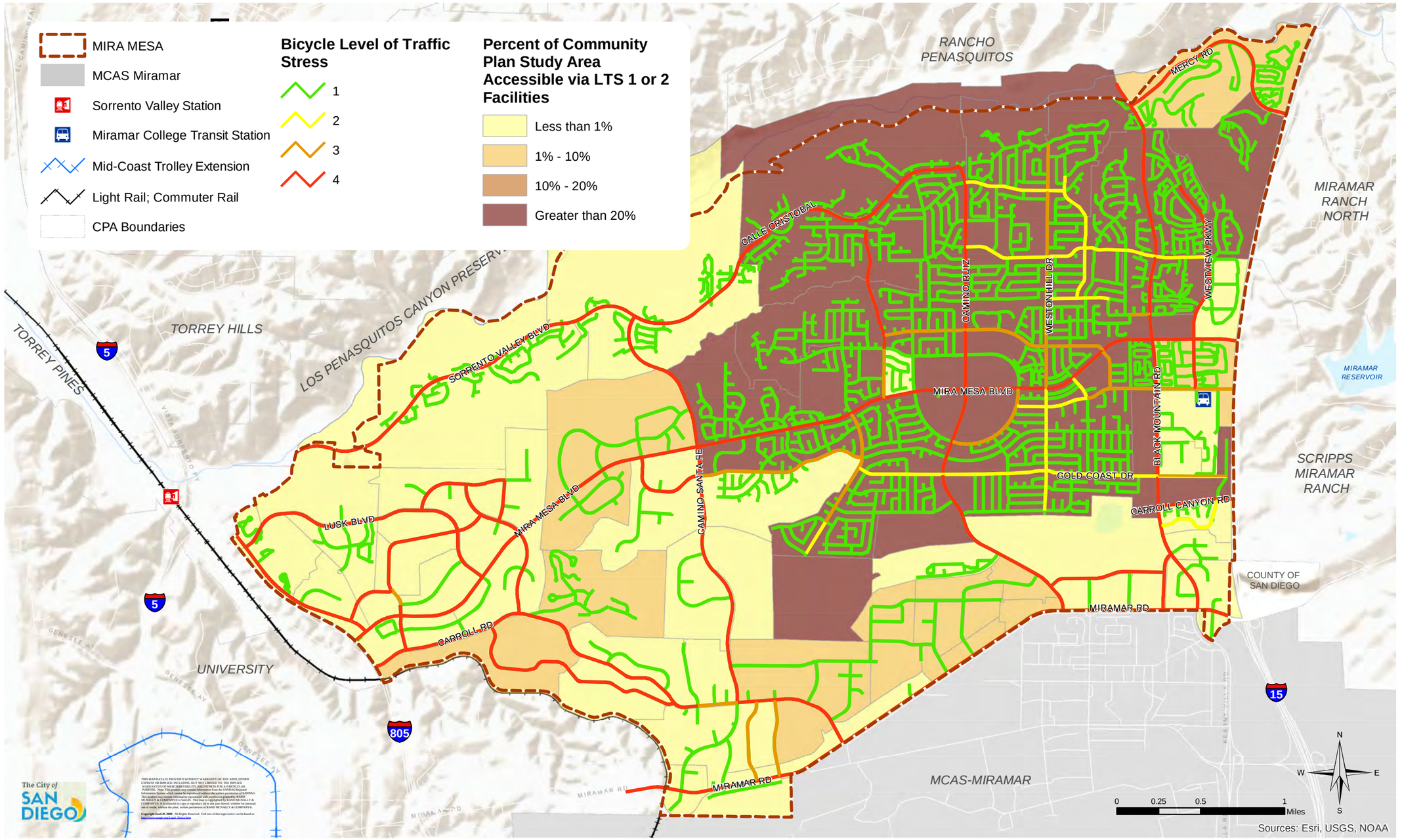
Table 4-16 Bicycle Connectivity Ratio at Pedestrian Study Intersections

Intersection ID	Intersection Name	Bicycle Connectivity Ratio
1	Ivory Coast Dr & Marauder Wy	54%
2	Vista Sorrento Pkwy & Lusk Blvd	26%
3	Vista Sorrento Pkwy & Directors Pl	19%
4	Vista Sorrento Pkwy & Mira Sorrento Pl	23%
5	Vista Sorrento Pkwy & Mira Mesa Blvd/I-805 NB Ramps	24%
6	Sorrento Valley Rd & Carroll Canyon Rd/I-805 SB Ramps	19%
7	Juniper Park Ln & Sorrento Valley Blvd	12%
8	Sunny Mesa Rd & Sorrento Valley Blvd	14%
9	Camino Santa Fe & Sorrento Valley Blvd/Calle Cristobal	16%
11	Carroll Canyon Rd & I-805 DAR	20%
13	Office Driveways & Lusk Blvd	22%
14	W Wateridge Cir & Lusk Blvd	13%
15	Telesis Ct & Lusk Blvd	15%
16	E Wateridge Cir & Lusk Blvd	16%
17	Pacific Center Blvd & Lusk Blvd	28%
18	Lusk Blvd & Barnes Canyon Rd	34%
19	Lusk Blvd & Morehouse Dr	34%
20	Lusk Blvd & Mira Mesa Blvd	37%
21	Scranton Rd & Mira Sorrento Pl	25%
22	Scranton Rd & Morehouse Dr	26%
23	Scranton Rd & Mira Mesa Blvd	27%
24	Scranton Rd & Sorrento South Dwy/Oberlin Dr	27%
25	Scranton Rd & Carroll Canyon Rd	24%
26	Pacific Heights Blvd & Barnes Canyon Rd	32%
27	Wireless Wy & Pacific Center Blvd	23%
28	Pacific Heights Blvd & Pacific Center Blvd	24%
29	Pacific Mesa Blvd & Pacific Center Blvd	23%
30	Pacific Mesa Blvd & Pacific Heights Blvd	32%
31	Pacific Heights Blvd & Mira Mesa Blvd	38%
32	Pacific Heights Blvd & Cornerstone Ct	33%
33	Pacific Heights Blvd & Carroll Canyon Rd	27%
34	Lopez Point Dr & Calle Cristobal	16%
35	Camino Propico & Calle Cristobal	14%
36	Lopez Ridge Park Driveways & Calle Cristobal	14%
37	Camino Miranda & Calle Cristobal	18%
38	Windey Ridge Wy & Calle Cristobal	28%
39	Prairie Wood Dr & Calle Cristobal	35%

Intersection ID	Intersection Name	Bicycle Connectivity Ratio
40	Avenida Del Gato & Calle Cristobal	36%
41	Camino Ruiz & Calle Cristobal	37%
42	Sequence Dr/ Huennekens St & Mira Mesa Blvd	31%
43	Genetic Center/Steadman St & Mira Mesa Blvd	28%
44	Flanders Dr & Mira Mesa Blvd	33%
45	Viper Wy & Mira Mesa Blvd	39%
46	Camino Santa Fe & Mira Mesa Blvd	42%
47	Schilling Ave & Mira Mesa Blvd	34%
48	Aderman Ave & Mira Mesa Blvd	39%
49	Parkdale Ave & Mira Mesa Blvd	58%
50	Reagan Rd & Mira Mesa Blvd	57%
51	Mira Mesa Mall Driveways & Mira Mesa Blvd	53%
52	Camino Ruiz & Mira Mesa Blvd	59%
53	New Salem St/Marauder Wy & Mira Mesa Blvd	56%
54	Westonhill Dr & Mira Mesa Blvd	61%
55	Greenford Dr & Mira Mesa Blvd	61%
56	Westmore Rd/Marbury Ave & Mira Mesa Blvd	54%
57	Black Mountain Rd & Mira Mesa Blvd	44%
58	Westview Pkwy & Mira Mesa Blvd	40%
59	I-15 SB Ramps & Mira Mesa Blvd	34%
60	I-15 NB Ramps & Mira Mesa Blvd	31%
62	Business Access Road & Carroll Canyon Rd	17%
63	Youngstown Wy & Carroll Canyon Rd	28%
64	Nancy Ridge Dr & Carroll Canyon Rd	27%
65	Rehco Rd & Carroll Rd	31%
66	Camino Santa Fe & Carroll Rd	38%
67	Carroll Rd & Kenamar Dr	31%
68	Carroll Rd & Miramar Rd	30%
70	Camino Santa Fe & Miramar Rd	25%
72	Commerce Ave & Miramar Rd	28%
73	Production Ave & Miramar Rd	29%
74	Distribution Ave & Miramar Rd	31%
75	Miramar Wy & Miramar Rd	32%
76	Empire St & Miramar Rd	18%
77	Dowdy Dr & Miramar Rd	18%
78	Chabot Dr & Miramar Rd	19%
79	Camino Ruiz & Miramar Rd	40%
80	Clayton Dr/Mitscher Wy & Miramar Rd	45%

Intersection ID	Intersection Name	Bicycle Connectivity Ratio
81	Black Mountain Rd & Miramar Rd	31%
82	Kearny Villa Rd & Miramar Rd	23%
83	Kearny Mesa Rd & Miramar Rd	21%
84	I-15 SB Ramps & Miramar Rd	18%
86	Camino Santa Fe & Flanders Dr	39%
87	Dabney Dr & Flanders Dr	49%
88	Parkdale Ave & Flanders Dr	52%
89	Camino Ruiz & Flanders Dr	55%
90	San Ramon Dr & Flanders Dr	49%
91	Camino Santa Fe & Top Gun St	35%
92	Camino Santa Fe & Miratech Dr	20%
93	Camino Santa Fe & Summers Ridge Rd	17%
94	Camino Santa Fe & Unnamed Road	25%
95	Camino Santa Fe & Trade St	35%
96	Parkdale Ave & Gold Coast Dr	48%
97	Montongo St & Acama St	38%
98	Montongo St & New Salem St	50%
99	Montongo St & Goleta Rd	47%
100	Camino Ruiz & Aquarious Dr	41%
101	Camino Ruiz & Teresa Dr/Capricorn Wy	51%
102	Camino Ruiz & Westmore Rd	58%
103	Camino Ruiz & New Salem St	58%
104	Camino Ruiz & Driveway	54%
105	Camino Ruiz & Reagan Rd/Marauder Wy	56%
106	Camino Ruiz & Gold Coast Dr	53%
107	Camino Ruiz & Jade Coast Dr	44%
108	Camino Ruiz & Carroll Canyon Rd	30%
109	Camino Ruiz & Miralani Dr	35%
110	Camino Ruiz & Activity Rd	36%
113	San Ramon Dr & Gold Coast Dr	46%
114	Thanksgiving Ln & Gold Coast Dr	40%
115	Black Mountain Rd & Gold Coast Dr	42%
116	Westonhill Dr & Arctrus Wy	48%
117	Black Mountain Rd & Capricorn Wy	48%
118	Westview Pkwy & Capricorn Wy	34%
119	Black Mountain Rd & Mercy Rd	25%
120	Black Mountain Rd & Westview Pkwy	26%
121	Black Mountain Rd & Galvin Ave	46%

Intersection ID	Intersection Name	Bicycle Connectivity Ratio
122	Black Mountain Rd & Gemini Ave	44%
123	Black Mountain Rd & Village Green/The Hills Driveways	44%
124	Black Mountain Rd & Hillery Dr	46%
125	Black Mountain Rd & Miramar College	41%
126	Black Mountain Rd & Carroll Canyon Rd	37%
127	Black Mountain Rd & Maya Linda Rd	34%
128	Black Mountain Rd/Kearny Villa Rd & Black Mountain Rd/Carroll Centre Rd	30%
129	Black Mountain Rd & Activity Rd	29%
130	Rickert Rd & Hillery Dr	45%
131	Westview Pkwy & Hillery Dr	29%
132	Mercy Rd & Kika Ct	19%
133	Alamenia Rd & Mercy Rd	23%
134	I-15 SB Ramps & Mercy Rd	24%
135	I-15 NB Ramps & Mercy Rd	25%
136	Westview Pkwy & Campus Point Dr N	20%
137	Westview Pkwy & Campus Point Dr S	25%
138	Westview Pkwy & Mira Lee Wy	34%
139	Westview Pkwy & Galvin Ave	36%
140	Westview Pkwy & Market Center Driveway	31%
141	Maya Linda Rd & Carroll Canyon Rd	29%
142	I-15 SB Ramps & Carroll Canyon Rd	29%
143	I-15 NB Ramps & Carroll Canyon Rd	30%



Existing Bicycle Network Connectivity (Low-Stress Connectivity)

4.3 TRANSIT

Public transportation (transit) service is provided throughout the San Diego region. The following section summarizes the existing transit environment in Mira Mesa using the following evaluations:

Demand	• Using ridership information • Based upon census-based mode share data • (Potential) based upon census-based population density data • (Potential) based upon LODES employment density data
Safety	• Using pedestrian- and bicycle-related collision data near transit stops for a recent five-year period
Quality	• Using inventory of transit stop amenities • Using roadway speed simulation analysis
Connectivity	• Using walkable area within 1/4-mile distance to major transit stations

Figure 4-21 shows an overview of the roadway facilities where transit is available within the Mira Mesa community. The Miramar College Transit Station is the only major transit station located within the community. The Sorrento Valley Station is located just outside of Mira Mesa, west of the community boundary, but is included in the discussion as it provides a major connection point for Mira Mesa's transit system and overall transportation network. Currently, buses are the primary form of transit provided in the community. Private shuttle services are also being utilized by some of the larger employers in the community and may not be reflected in Figure 4-21.

BUS ROUTES

There are nine Metropolitan Transit Service (MTS) routes that currently serve the Mira Mesa community. A description and map of each of the bus routes within the community is provided in **Appendix D**. Most of the bus routes serving the community are focused on connecting specific areas of the community to one of the two major transit stations for access to other bus routes, trolley lines and regional services. Mira Mesa Boulevard services three bus routes all of which terminate or travel through the Miramar Transit Station. Otherwise most roadways have only one route. Bus routes within the Mira Mesa community include;

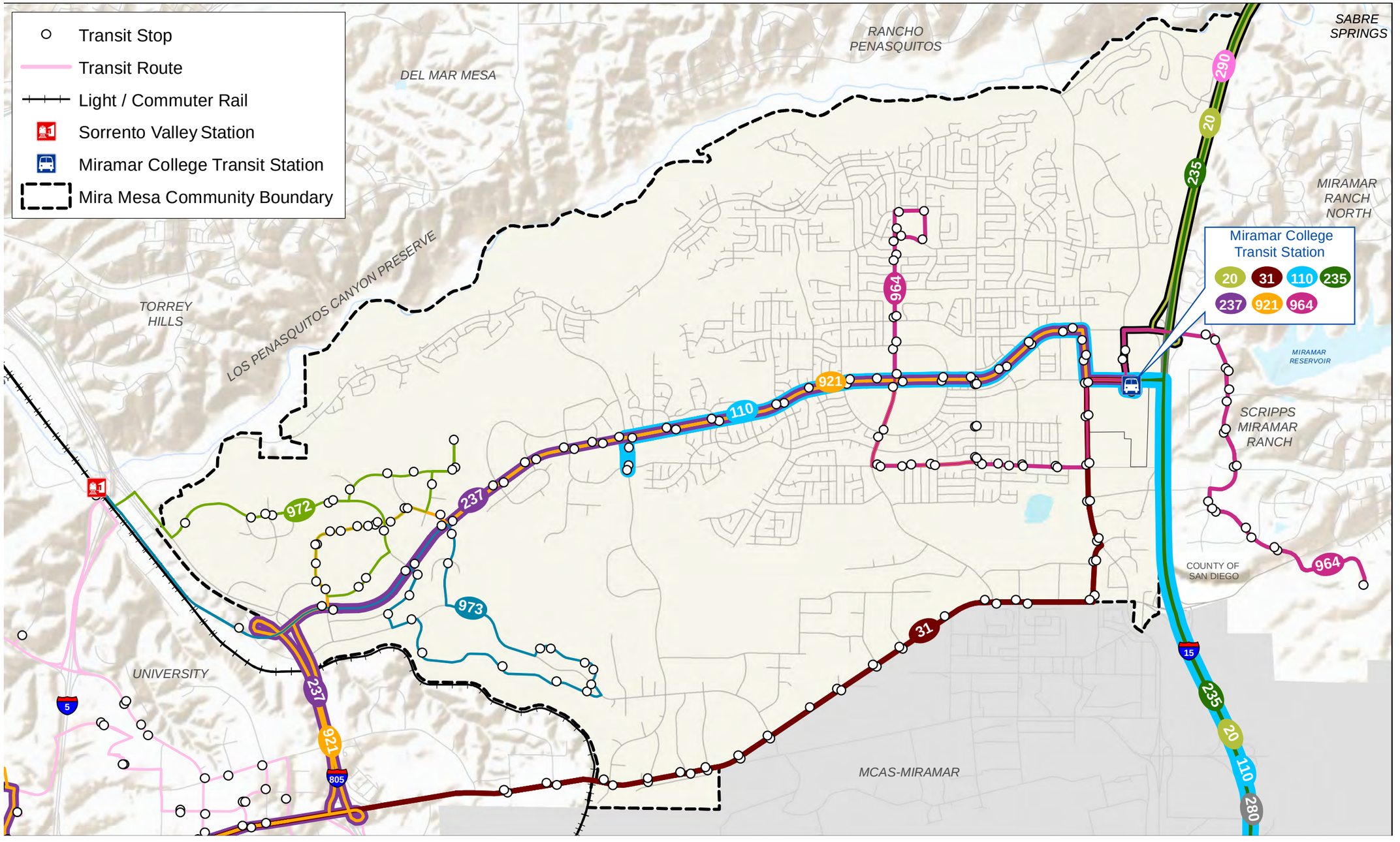
ROUTE 20 – 30-minute headway service between Downtown San Diego and Rancho Bernardo with a stop at Miramar College Transit Station

ROUTE 31 – 30-minute headway peak period service (5:55 – 8:28 AM and 2:27 – 6:33 PM) between University community and Mira Mesa via Miramar Rd

ROUTE 110 (EXPRESS) – Limited AM (6:00 – 7:00) and PM (4:00 – 5:30) service between Downtown and 2 stops in Mira Mesa: Miramar College Transit Station and Camino Santa Fe & Flanders Dr

ROUTE 235 – 15-minute headway service between Downtown San Diego and Escondido with a stop at Miramar College Transit Station

ROUTE 237 – peak hour 15-minute headways (6:22 – 9:50 AM and 4:19 – 5:40 PM) between University community and Mira Mesa community along Mira Mesa Blvd between I-805 and Miramar College Transit Station



Existing Transit Routes

ROUTE 921 - 30-minute headway service between UTC and Mira Mesa via Mira Mesa Blvd and Scranton Rd / Barnes Canyon Rd / Pacific Heights Blvd

ROUTE 964 – 30-minute headway service between Scripps Ranch and Mira Mesa via Black Mountain Rd / Gold Coast Dr / Camino Ruiz

ROUTE 972 – Limited AM (6:30 – 9:00) and PM (3:30 – 6:10) service between Sorrento Valley Station to Sorrento Mesa area (western portion of the community)

ROUTE 973 - Limited AM (6:30 – 9:00) and PM (3:30 – 6:10) service between Sorrento Valley Station to Carroll Canyon area

RAIL SERVICES

No rail lines traverse through the Mira Mesa Community; however, the Sorrento Valley Station serves the COASTER/AMTRAK and is located just west of the community with access available from multiple Mira Mesa roadways. The rail services provide connections north and south of the community and connect to other regional rail services.

Both the COASTER and the Pacific Surfliner services are part of the 351-mile Los Angeles-San Diego-San Luis Obispo Rail Corridor that travels through a six-county coastal region in Southern California.

NCTD COASTER

The COASTER is a commuter rail line operated by NCTD that runs north to south from Oceanside to downtown San Diego with a stop at the Sorrento Valley Station. The COASTER serves eight stations including Santa Fe Depot, Old Town, Sorrento Valley, Solana Beach, Encinitas, Carlsbad Poinsettia, Carlsbad Village, and Oceanside. It takes about an hour to travel the entire route from downtown San Diego (Santa Fe Depot) to the Oceanside Transit Center. The rail line provides 11 daily round-trip services Monday through Thursday, 13 round-trip services on Fridays, six round-trip services on Saturdays, and four round-trip services on Sundays and Holidays. The COASTER also provides expanded service in the spring and summer and additional trains scheduled for special events as needed (such as Padres games). The fare varies depending on the number of zones traveled.

AMTRAK Pacific Surfliner

The Pacific Surfliner is a passenger rail line operated by AMTRAK that runs north to south from San Luis Obispo to downtown San Diego with a stop at the Sorrento Valley Station. The Pacific Surfliner serves thirty stations including the eight COASTER stations stated above, as well as Anaheim, Santa Barbara, and Los Angeles. The rail line offers 12 daily round-trip services between San Diego and Los Angeles, and between Santa Barbara and San Diego. Commuters with COASTER passes can use AMTRAK trains that are not full.

SHUTTLE SERVICES

Several of the larger employers in the area provide their own shuttle service between the Sorrento Valley Station and their buildings. Currently the private shuttles are independently operated and are not shared resources between different employers.

4.3.1 TRANSIT DEMAND

Transit demand was assessed through a combination of stop-level ridership data, census commute mode share data, and evaluation of the population and employment density within Mira Mesa community.

A full list of stop-specific ridership information from Spring 2017 is presented in **Appendix D**. The data provides boardings (getting on the vehicle), alightings (getting off the vehicle), and total ridership for MTS routes serving the Mira Mesa community using ridership data provided by SANDAG/MTS. **Figure 4-22** displays the average number of weekday boardings at each stop and **Figure 4-23** displays the average number of weekday alightings at each stop.

Miramar College Transit Station, the only major transit stop in the community, has the highest boardings and alightings. Not including the Miramar College Transit Station, the ten bus stops with the highest daily boardings are provided in **Table 4-17**, and the ten stops with the highest daily alightings are provided in **Table 4-18**.

As shown in the tables, many of the high boardings and alightings stops are located along Mira Mesa Boulevard and Black Mountain Road. Within the community, boardings and alightings are generally higher near shopping centers. The employment area on the west side of the community has low to moderate ridership. Camino Ruiz where route 964 services the residential area north of Mira Mesa Boulevard also has moderate ridership. Miramar Road has low ridership.

Table 4-17 Mira Mesa Community Transit Stops with Most Passenger Boardings

Transit Stops with Most Passengers	Boardings
Mira Mesa Bl & Camino Ruiz (NW Corner)	148
Mira Mesa Bl & Camino Ruiz (SE Corner)	80
Black Mountain Rd & Gold Coast Dr (NW Corner)	77
Mira Mesa Bl & Black Mountain Rd (NW Corner)	73
Black Mountain Rd & Activity Rd (NW Corner)	53
Mira Mesa Bl & Pacific Heights Bl (SE Corner)	50
Barnes Canyon Rd & Pacific Heights Bl (SE Corner)	43
Gold Coast Dr & Camino Ruiz (SE Corner)	35
Mira Mesa Bl & Shilling Av (NW Corner)	33
Zapata Av & Kelowna Rd (SW Corner)	30

*FY2017 Spring Ridership
Source: SANDAG

Table 4-18 Mira Mesa Community Transit Stops with Most Passenger Alightings

Transit Stops with Most Passengers	Alightings
Mira Mesa Bl & Camino Ruiz (SE Corner)	132
Mira Mesa Bl & Camino Ruiz (NW Corner)	91
Black Mountain Rd & Mira Mesa Bl (SW Corner)	68
Camino Ruiz & Capricorn Wy (NE Corner)	68
Black Mountain Rd & Miramar Rd (NE Corner)	67
Black Mountain Rd & Gold Coast Rd (NE Corner)	53
Mira Mesa Bl & Pacific Heights Bl (NW Corner)	47
Barnes Canyon Rd & Pacific Heights Bl (SW Corner)	39
Camino Ruiz & Mira Mesa Bl (NW Corner)	38
Westview Pkwy & Mira Mesa MarketCenter (East side)	33

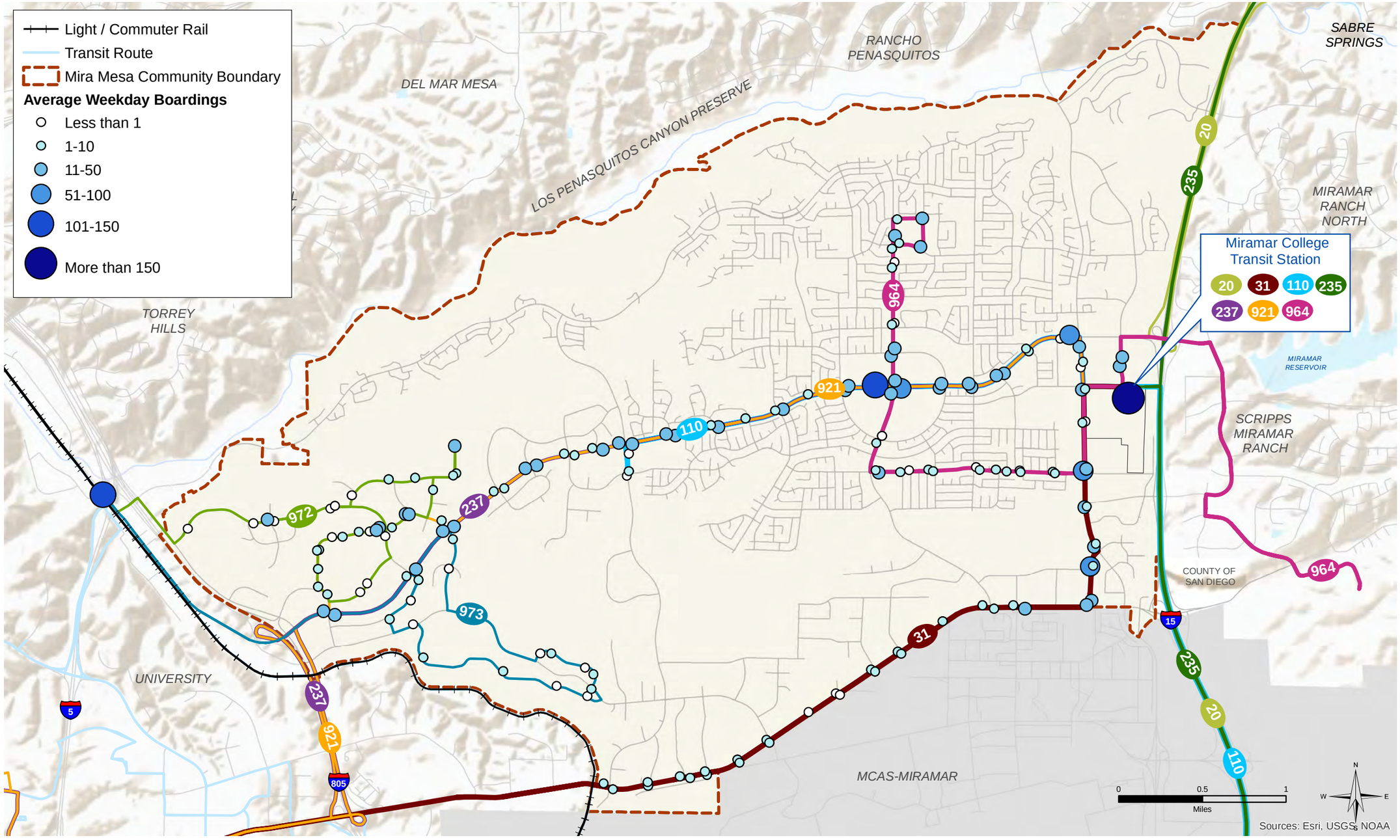
*FY2017 Spring Ridership
Source: SANDAG

Table 4-19 provides a summary of total ridership for each route within the community. Route 921 is the most heavily utilized bus route in the community, running east-west along Mira Mesa Boulevard between the University of California San Diego and the Miramar College Transit Station. This route services the employment area in Sorrento Valley during the weekdays only, and services the retail and recreational areas near Mesa Verde Park. Route 964 has the second highest ridership and connects Mira Mesa neighborhoods and destinations to Scripps Ranch neighborhoods and destinations. These two highest ridership bus routes show the desire for connections between Mira Mesa and the adjacent communities.

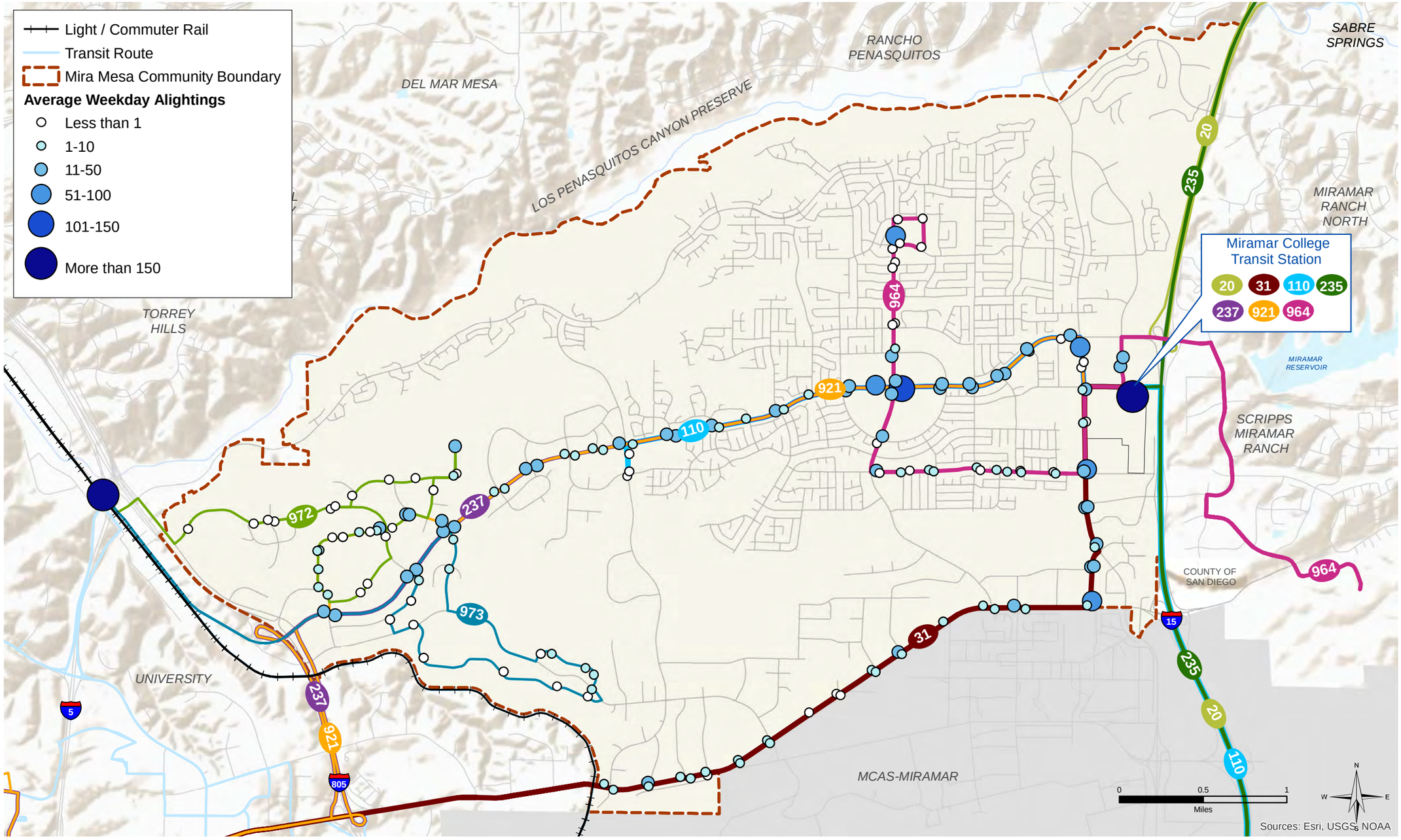
Table 4-19 Mira Mesa Community Ridership by Route

Route	Daily Ridership within Community
20	4242
31	3048
110	669
235	2512
237	4009
921	9802
964	4422
972	990
973	582
978	51
979	35

*FY2017 Spring Ridership
Source: SANDAG



Transit Boardings by Stop



Transit Alightings by Stop

Transit commute mode share is another measure of where demand exists and are successfully facilitating some transit commutes. American Community Survey data, 2017 5-year estimates, were used to determine how the commute mode share in the Mira Mesa community compares to both the City of San Diego and the County of San Diego. **Table 4-20** presents the transit commute mode share comparison. The Mira Mesa community has a mode share nearly half that of the City of San Diego and the County of San Diego. This indicates that transit is not a popular choice for people in this community. Transit is composed primarily of bus connections for this community, with the Sorrento Valley Station being the only stop for rail service.

Table 4-20 Transit Commute Mode Share Comparison

	Mira Mesa	City of San Diego	San Diego County
Total Transit Commutes	1,079	28,753	45,883
Total Workers	58,910	762,993	1,549,529
Transit Commute Mode Share	*1.8%*	*3.8%*	*3.0%*

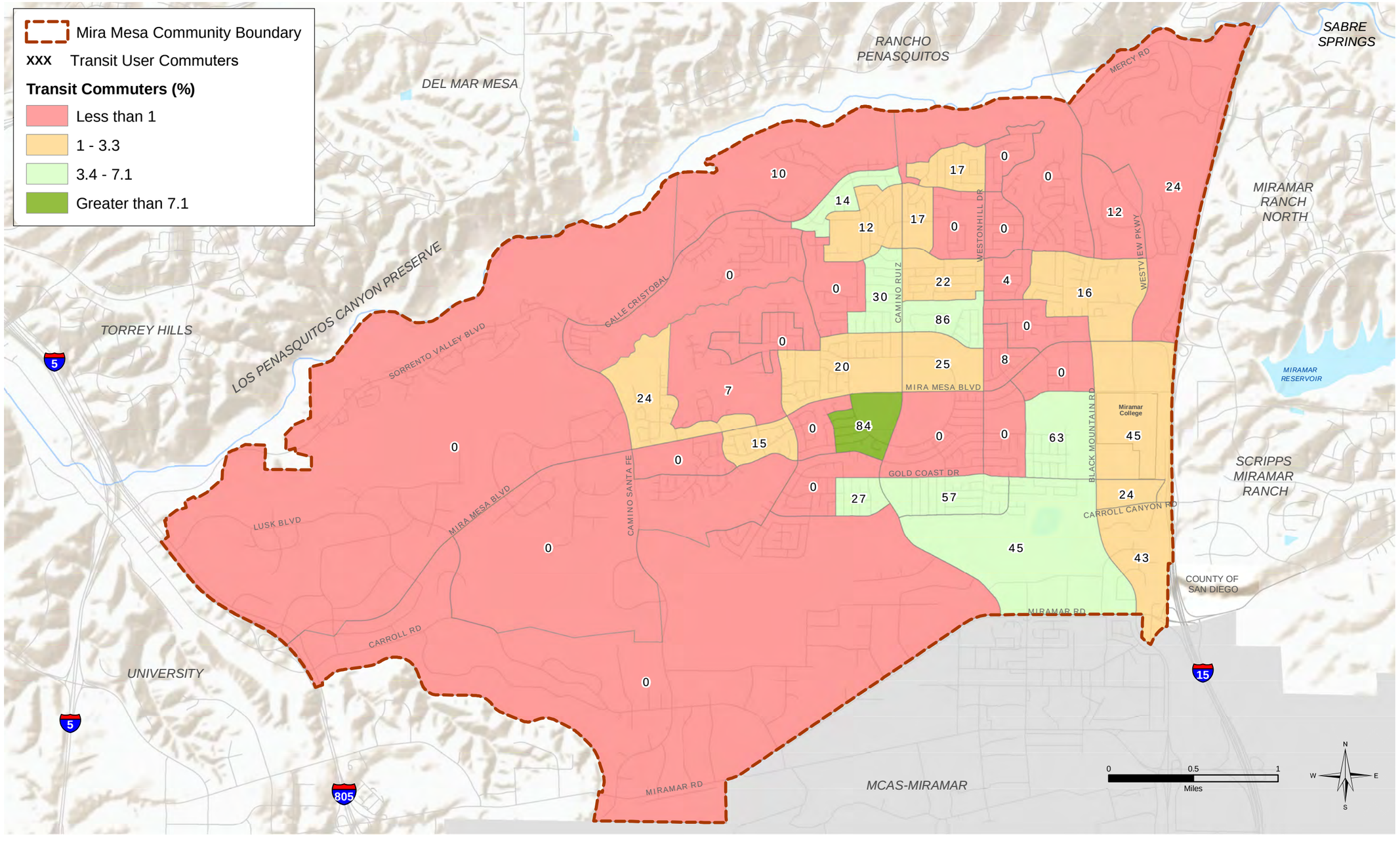
Figure 4-24 displays transit commute rates and the total number of transit commuters by census block group throughout the Mira Mesa community. As shown, transit commute mode share is higher for the areas along the eastern portion of the community, near the Miramar College Transit Station. Areas west and south have no commute mode share, but also have little to no residential uses.

An evaluation of the residential and employment density in the community was also performed to determine areas with the highest population for transit ridership potential. Residential and employment density are shown in **Figure 4-25** and **Figure 4-26**, respectively. Residential density is highest in the eastern portion of the community where large blocks of single-family homes and several multi-family developments are located. Employment density is largely focused on the western portion of the community. Thus, transit demand for work commuters may focus on providing access to the businesses in the western areas of the community, whereas resident-focused service may be in greater demand in the central and eastern portions of the community. The southern, industrial portion of the community has a mix of moderate residential and employment density.

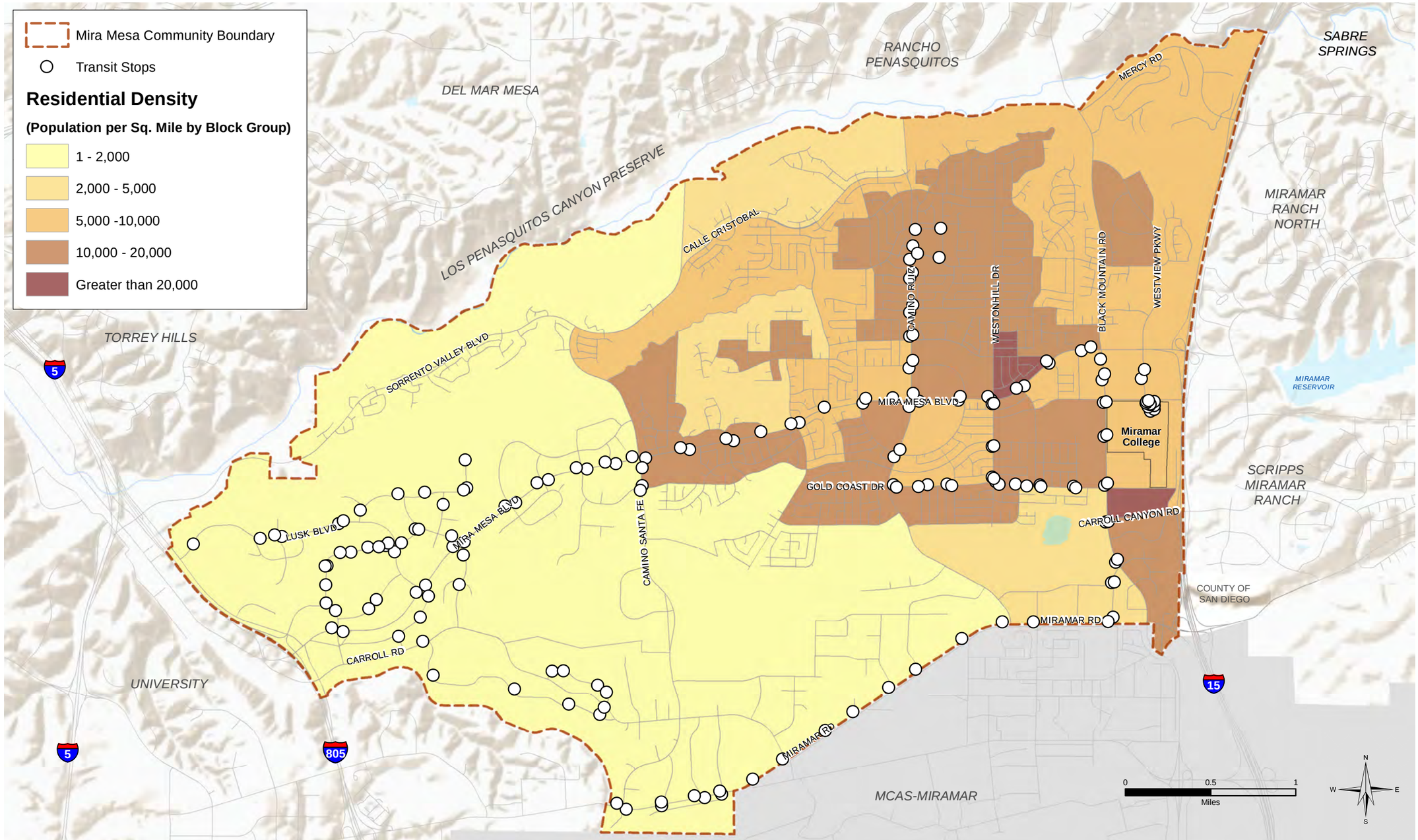
An evaluation of how much of the density is within 0.25-miles of a transit stop was performed. The results are summarized in **Table 4-21**. As shown, 57% of residents and 85% of jobs are within 0.25-miles of a transit stop.

Table 4-21 Residential and Employment Density Near Transit

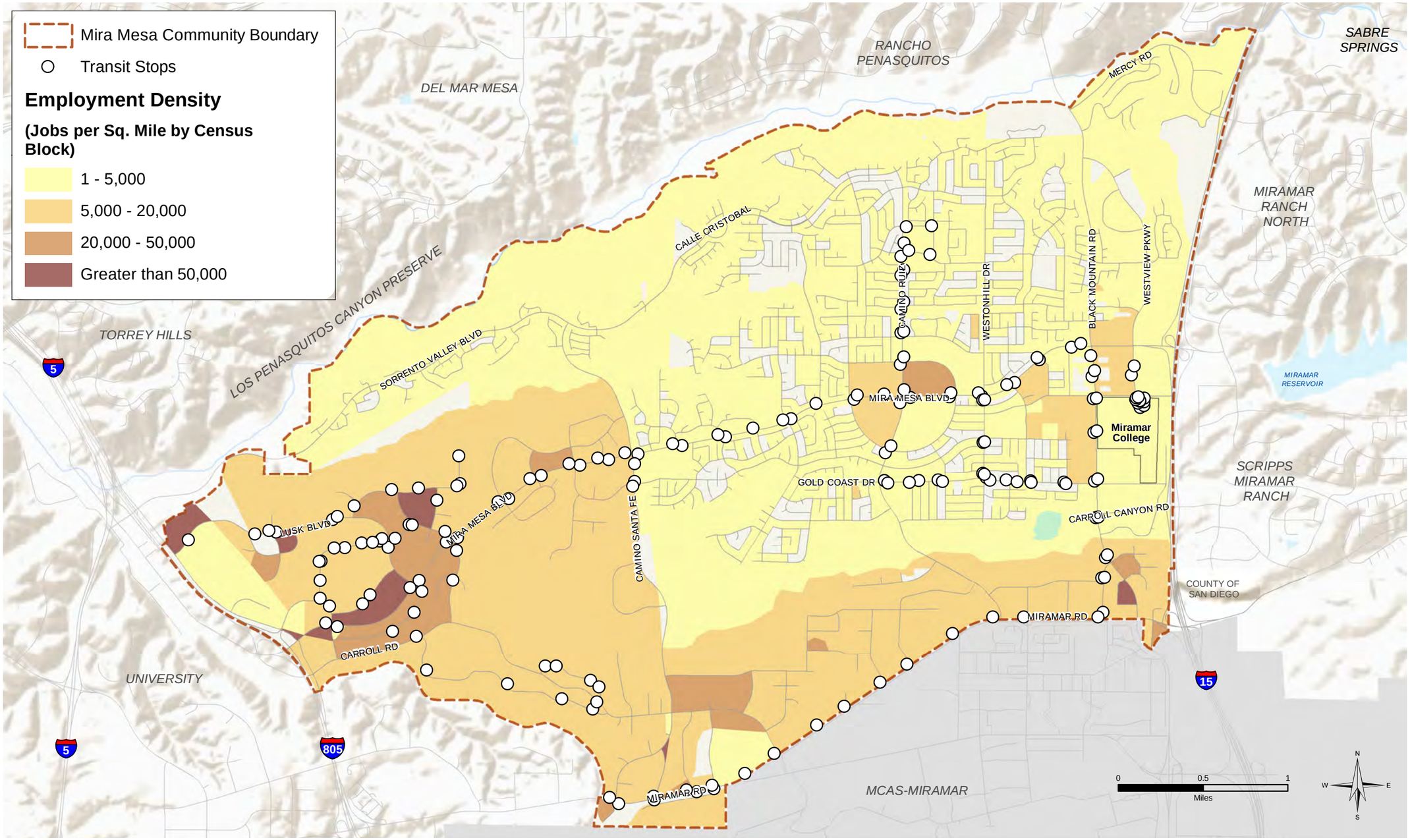
	Near Transit	Total in Mira Mesa Community
Residents	14,635	25,840
Jobs	*82,972*	*97,946*



Transit Commute Mode Share by Census Block Group



Residential Density Near Transit



Employment Density Near Transit

4.3.2 SAFETY NEAR TRANSIT STOPS

Between October 2012 and September 2017, there were a total of 110 reported pedestrian- and bicycle-involved collisions along corridors that serve transit in the Mira Mesa community. In the State of California, collision reports must be generated for any collision where property damage totals 750 dollars or more, someone is injured, or someone is killed. As a result, it is important to note some incidents may go unreported for failing to meet one of these criteria.

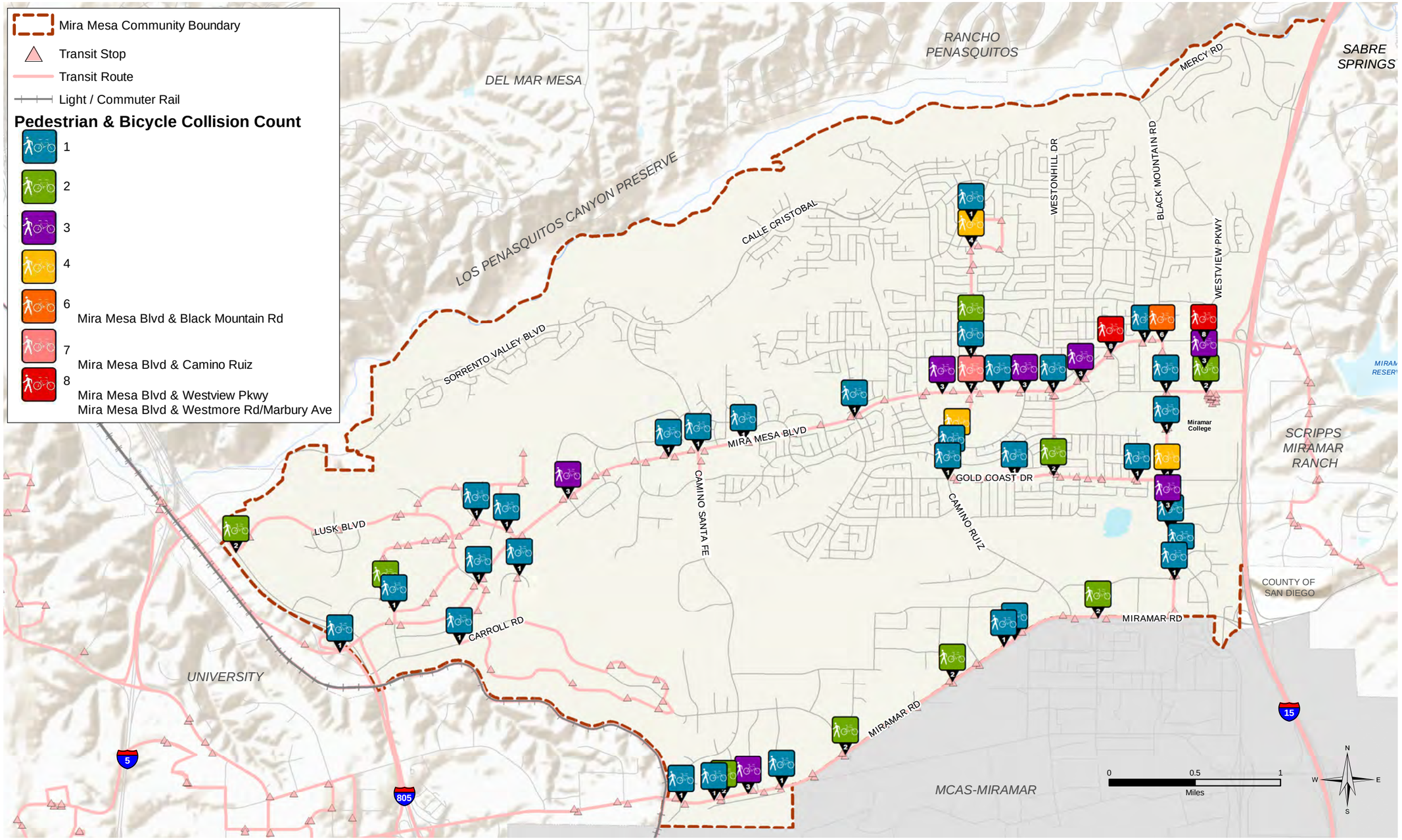
Figure 4-27 displays the reported pedestrian- and bicycle-involved collision locations across the community overlaid with the transit stops in the community. Additional information on the collisions is provided in **Appendix A**.

Locations with at least three combined pedestrian- or bicycle-involved collisions along a transit corridor are identified in **Table 4-22.**

Table 4-22 Most Frequent Collision Locations near Transit Stops

Intersections	Collisions
Mira Mesa Blvd & Westview Pkwy	8
Mira Mesa Blvd & Westmore Rd/Marbury Ave	8
Mira Mesa Blvd & Camino Ruiz	7
Mira Mesa Blvd & Black Mountain Rd	6
Camino Ruiz & Capricorn Wy	4
Camino Ruiz & Reagan Rd/Marauder Wy	4
Black Mountain Rd & Gold Coast Dr	4
Mira Mesa Blvd & Sequence Dr	3
Mira Mesa Blvd & Mira Mesa Mall	3
Mira Mesa Blvd & New Salem St	3
Mira Mesa Blvd & Greenford Dr	3
Miramar Rd East of Commerce Ave/Milch Rd	3
Westview Pkwy & Market Center Dwy	3
Black Mountain Rd & Carroll Canyon Rd	3

As shown in the data, areas near transit stops with higher ridership (commute mode share and boardings/alightings) have higher pedestrian- and bicycle-involved collisions. This indicates that the pedestrian and bicycle volumes are likely higher near the transit routes, and there is a need for improved facilities at major intersections and roadways near transit stops.



Bicycle- and Pedestrian-Involved Collisions Along Transit Corridors

4.3.3 TRANSIT QUALITY

Travel time runs were performed using the floating car method on Black Mountain Road, Mira Mesa Boulevard, Camino Ruiz, and Miramar Road, all of which service transit routes in the community. A discussion on the travel time results for these corridors is provided in **Section 4.4.4**.

MTS also publishes an annual Performance Monitoring Report for the productivity and service quality of each operating transit route. Based on the fiscal year 2017 report, provided in **Appendix D**, Route 964 which connects the Mira Mesa community to the Scripps Ranch community currently operates under the MTS on-time performance goal of 90%.

The rider amenities provided at each stop are presented in **Table 4-23**. For each stop, the amenities present are compared against the standard suite of amenities as identified in the MTS Designing for Transit Manual as described in **Section 2.3**. For stops serving multiple routes, minimum transit amenity requirements are based on total boardings from all routes that serve that stop.

Of particular interest are stations which do not provide sufficient station amenities based on ridership. Accessible stations must have sidewalks with sufficient width, a landing area for a bus ramp, and space for seating underneath a shelter (where present). Of the 168 stops assessed, 57 do not currently meet the station amenities standards.

The MTS stops listed below did not meet accessibility requirements; *italics* represent stops serving more than one route.

Route 20:

- 11700 – Black Mountain Rd/Miramar College Drwy
- 12841 – Black Mountain Rd/Activity Rd
- 12842 – Black Mountain Rd/Miramar Rd

Route 31:

- *11700 – Black Mountain Rd/Miramar College Drwy*
- 12489 – Black Mountain Rd/Carroll Canyon Rd
- *12841 – Black Mountain Rd/Activity Rd*
- *12842 – Black Mountain Rd/Miramar Rd*
- 99042 – Miramar Rd/Black Mountain Rd
- 99157 – Miramar Rd/Empire St

Route 110:

- 10870 – Mira Mesa Bl/Reagan Rd
- 11257 – Mira Mesa Bl/Montongo St
- 11272 – Mira Mesa Bl/Camino Ruiz

Route 237:

- *11272 – Mira Mesa Bl/Camino Ruiz*

Route 921:

- *10870 – Mira Mesa Bl/Reagan Rd*
- *11257 – Mira Mesa Bl/Montongo St*
- *11272 – Mira Mesa Bl/Camino Ruiz*
- 12837 – Black Mountain Rd/Village Greens MHP (10771)
- 13227 – Barnes Canyon Rd/10140
- 13228 – Barnes Canyon Rd/10030
- 99203 – Westonhill Dr/Mira Mesa Bl
- 99206 – Westonhill Dr/Hebrides Dr
- 99207 – Westonhill Dr/Gold Coast Dr
- 99208 – Westonhill Dr/Gold Coast Dr
- 99270 – Barnes Canyon Rd/Pacific Heights Bl

Route 964:

- *11700 – Black Mountain Rd/Miramar College Drwy*
- 60783 – Gold Coast Dr/Gold Coast Pl
- 60784 – Gold Coast Dr/Londonderry Av
- 60785 – Gold Coast Dr/Westchester Av
- 99267 – Camino Ruiz/Calle Morelos

Route 972:

- 98505 – Pacific Center Bl/Pacific Heights Bl
- 98512 – Morehouse Dr/5510 (Fs Morehouse Tech Ctr Drvwy)
- 98514 – Lusk Bl/6455 (@ Qualcomm Design Ctr)
- 98515 – Lusk Bl/Telesis Ct
- 99271 – Barnes Canyon Rd/Pacific Heights Bl

Route 973:

- 98556 – Nancy Ridge Dr/Carrol Rd (Carroll Ridge Bus Pk)
- 98557 – 5960 Nancy Ridge Dr (Sorrento Vista Indu)

The MTS stops listed below did not meet sign and pole; and route designation requirements; *italics* represent stops serving more than one route or also accessibility deficient.

Route 31:

- *99157 – Miramar Rd/Empire St*

Route 921:

- 99061 – Pacific Heights Blvd/Mira Mesa Blvd

Route 972:

- 13200 – Lusk Blvd/Barnes Canyon Rd
- 98500 – Barnes Canyon Rd/Lusk Blvd
- 98502 – Pacific Mesa Blvd/Sorrento View Business Park
- 98503 – Pacific Center Ct/Pacific Center Blvd
- 98504 – Pacific Center Ct/10450 (In Front of Time Warner)

- *98505 – Pacific Center Blvd/Pacific Heights Blvd*
- 98506 – Pacific Center Blvd/McKellar Ct
- 98507 – Lusk Blvd/Vista Sorrento Pkwy
- 98508 – Lusk Blvd/Wateridge Cir
- 98509 – Lusk Blvd/Telesis Ct
- 98510 – Lusk Blvd/Pacific Center Blvd
- 98511 – Morehouse Dr/5590 (Pro-Sat & Comm Drwy)
- *98512 – Morehouse Dr/5510 (Morehouse Tech Center Drwy)*
- 98513 – Barnes Canyon Rd/10225 (@ Mailboxes)
- *98514 – Lusk Blvd/6455 (@ Qualcomm Design Center)*
- *98515 – Lusk Blvd/Telesis Ct*

Route 973:

- 98517 – Pacific Heights Blvd/Mira Mesa Blvd
- 98522 – Oberlin Dr/5871 (@ Mailboxes)
- 98525 – 6310 Nancy Ridge Dr (Nancy Ridge Tech Pk/6349)
- 98526 – 6650 Nancy Ridge Dr/6767 (@ Fire Hydrant After Drwy)
- 98527 – Phage Biotechnology
- 98549 – 5910 Pacific Center Blvd
- 98550 – 5788 Pacific Center Blvd
- 98551 – Pacific Heights Blvd/Cornerstone Ct
- 98552 – Brown Deer Rd/Ferris Sq
- 98553 – 9215 Brown Deer Rd
- 98554 – 9339 Carroll Park Dr
- 98555 – 9449 Carroll Park Dr
- *98556 – Nancy Ridge Dr/Carrol Rd (Carroll Ridge Business Pk)*
- 98557 – 5960 Nancy Ridge Dr (Sorrento Vista Industrial Pk)
- 98558 – 5280 Carroll Canyon Rd
- 98559 – Youngstown Wy/Oberlin Dr
- 98560 – 5807 Oberlin Dr

Table 4-23 Transit Stop Amenities

Stop ID	Route Number	Meets Standards?*	Stop Location	Boardings	Sign and Pole	Route Designation	Accesible	Bench	Expanded Sidewalk	Shelter	Time Table	Trash Container	Lighting
10085	31	Yes	Miramar Rd/Milch Rd	8	X	X	X	X					X
10095	31	Yes	Miramar Rd/Distribution Av	1	X	X	X	X	X				X
10107	31	Yes	Miramar Rd/Carroll Rd	8	X	X	X	X	X				X
10124	31	Yes	Miramar Rd/Dowdy Dr	4	X	X	X	X	X				X
10132	31	Yes	Miramar Rd/Cabot Dr	4	X	X	X	X	X				X
10142	110, 921	Yes	Mira Mesa Bl/Reagan Rd (E)	13	X	X	X	X	X				X
10149	110, 921	Yes	Mira Mesa Bl/Westonhill Dr	11	X	X	X	X	X	X		X	X
10168	110, 921	Yes	Mira Mesa Bl/Marbury Av	7	X	X	X	X	X			X	
10422	237, 973	Yes	Mira Mesa Bl/Scranton Rd	19	X	X	X	X	X	X	X	X	X
10450	31	Yes	Miramar Rd/Frost Mar Pl	4	X	X	X	X					X
10464	31	Yes	Miramar Rd/Production Av	1	X	X	X	X	X				X
10484	110, 921	Yes	Mira Mesa Bl/Parkdale Av	17	X	X	X	X					X
10498	110, 921	Yes	Mira Mesa Bl/Reagan Rd (W)	18	X	X	X	X	X				X
10511	110, 237, 921	Yes	Mira Mesa Bl/Camino Ruiz	81	X	X	X	X	X				X
10542	110, 921	Yes	Mira Mesa Bl/Greenford Dr	19	X	X	X	X	X				X
10553	921	Yes	Mira Mesa Bl/Rickert Rd	1	X	X	X	X	X				X
10859	110, 921	Yes	Mira Mesa Bl/Parkdale Av	5	X	X	X	X	X				X
10870	110, 921	No	Mira Mesa Bl/Reagan Rd	12	X	X		X	X				
11223	31	Yes	Miramar Rd/Camino Santa Fe	6	X	X	X	X	X				X
11227	31	Yes	Miramar Rd/Commerce Av	5	X	X	X	X					X
11233	31	Yes	Miramar Rd/Production Av	3	X	X	X		X				X

Stop ID	Route Number	Meets Standards?*	Stop Location	Boardings	Sign and Pole	Route Designation	Accesible	Bench	Expanded Sidewalk	Shelter	Time Table	Trash Container	Lighting
11241	31	Yes	Miramar Rd/Distribution Av	2	X	X	X	X	X	X		X	X
11251	31	Yes	Miramar Rd/Carroll Rd	4	X	X	X	X					X
11257	110, 921	No	Mira Mesa Bl/Montongo St	1	X	X		X	X				
11261	31	Yes	Miramar Rd/Empire St	1	X	X	X	X	X				X
11265	31	Yes	Miramar Rd/Dowdy Dr	2	X	X	X	X					X
11272	110, 237, 921	No	Mira Mesa Bl/Camino Ruiz	148	X	X		X	X	X	X	X	
11274	31	Yes	Miramar Rd/Cabot Dr	2	X	X	X	X					X
11282	110, 921	Yes	Mira Mesa Bl/New Salem St	13	X	X	X						X
11289	110, 921	Yes	Mira Mesa Bl/Westonhill Dr	11	X	X	X	X	X				X
11292	31	Yes	Miramar Rd/Camino Ruiz	2	X	X	X	X	X	X	X	X	X
11294	110, 921	Yes	Mira Mesa Bl/Greenford Dr	21	X	X	X	X					X
11302	110, 921	Yes	Mira Mesa Bl/Westmore Rd	5	X	X	X	X	X				X
11320	237, 110, 921	Yes	Mira Mesa Bl/Black Mountain Rd	73	X	X	X	X	X	X	X	X	
11699	31, 964	Yes	Black Mountain Rd/Gold Coast Dr	38	X	X	X	X	X	X	X	X	X
11700	31, 964	No	Black Mountain Rd/Miramar College Drwy	4	X	X		X				X	
11701	31	Yes	Black Mountain Rd/Activity Rd	1	X	X	X	X					
11703	31	Yes	Black Mountain Rd/Carroll Center Rd	2	X	X	X	X	X				
12071	964	Yes	Camino Ruiz/Reagan Rd	8	X	X	X	X		X	X	X	
12073	964	Yes	Camino Ruiz/Mira Mesa Bl	20	X	X	X	X	X	X	X	X	
12108	110, 237, 921	Yes	Black Mountain Rd/Mira Mesa Bl	14	X	X	X	X	X	X	X	X	
12109	921	Yes	Black Mountain Rd/10770 The Woods MHP	0	X	X	X						

Stop ID	Route Number	Meets Standards?*	Stop Location	Boardings	Sign and Pole	Route Designation	Accesible	Bench	Expanded Sidewalk	Shelter	Time Table	Trash Container	Lighting
12111	31, 964	Yes	Black Mountain Rd/Hillery Dr	9	X	X	X	X	X	X	X	X	X
12112	31	Yes	Black Mountain Rd/Carroll Canyon Rd	3	X	X	X	X					X
12402	110	Yes	Camino Santa Fe/Flanders Dr	3	X	X	X						X
12489	31	No	Black Mountain Rd/Carroll Canyon Rd	2	X	X		X				X	X
12807	964	Yes	Camino Ruiz/Reagan Rd	1	X	X	X	X					X
12837	921	No	Black Mountain Rd/Village Greens MHP (10771)	3	X	X							X
12838	31, 964	Yes	Black Mountain Rd/Hillery Dr	0	X	X	X	X					
12839	31, 964	Yes	Black Mountain Rd/Gold Coast Dr	8	X	X	X	X	X	X	X	X	X
12840	31, 964	Yes	Black Mountain Rd/Miramar College Way	0	X	X	X	X			X		X
12841	31	No	Black Mountain Rd/Activity Rd	1	X	X							X
12842	31	No	Black Mountain Rd/Miramar Rd	3	X	X							
12844	31	Yes	Black Mountain Rd/Carroll Center Rd	1	X	X	X	X	X			X	X
13003	31	Yes	Miramar Rd/Miramar Way	3	X	X	X	X					X
13070	31	Yes	Miramar Rd/7636	1	X	X	X	X	X				
13101	31	Yes	Miramar Rd/Miramar Way	3	X	X	X	X					X
13104	31	Yes	Miramar Rd/Northgate Plaza	2	X	X	X	X					X
13195	921, 972	Yes	Scranton Rd/Morehouse Dr	8	X	X	X	X					
13196	921, 972	Yes	Scranton Rd/9605	4	X	X	X	X	X		X		
13197	921, 972	Yes	Scranton Rd/SD Tech Center (9805)	8	X	X	X	X					X
13198	921	Yes	Barnes Canyon Rd/10055	4	X	X	X	X					X
13199	921, 972	Yes	Barnes Canyon Rd/Lusk Bl	19	X	X	X	X			X		

Stop ID	Route Number	Meets Standards?*	Stop Location	Boardings	Sign and Pole	Route Designation	Accesible	Bench	Expanded Sidewalk	Shelter	Time Table	Trash Container	Lighting
13200	972	No	Lusk Bl/Barnes Canyon Rd	0			X						
13202	973	Yes	Mira Mesa Bl/Oberlin Dr	30	X	X	X	X	X	X	X	X	
13203	237, 921	Yes	Mira Mesa Bl/Pacific Heights Bl	50	X	X	X	X	X	X	X	X	X
13204	921	Yes	Mira Mesa Bl/Huennekens St	4	X	X	X	X			X	X	
13205	237, 921	Yes	Mira Mesa Bl/Steadman St	27	X	X	X	X	X	X	X	X	
13206	921	Yes	Mira Mesa Bl/Flanders Dr	6	X	X	X				X		
13207	921	Yes	Mira Mesa Bl/Viper Wy	10	X	X	X	X	X			X	X
13208	110, 921	Yes	Mira Mesa Bl/Camino Santa Fe	16	X	X	X	X			X		X
13209	110, 921	Yes	Mira Mesa Bl/Caminito Alvarez	19	X	X	X	X					X
13210	110, 921	Yes	Mira Mesa Bl/Aderman Av	14	X	X	X	X					
13215	110, 921	Yes	Mira Mesa Bl/Dabney Dr	2	X	X	X	X	X				X
13216	110, 921	Yes	Mira Mesa Bl/Aderman Av	8	X	X	X	X	X				X
13217	110, 921	Yes	Mira Mesa Bl/Shilling Av	33	X	X	X	X	X				
13218	921	Yes	Mira Mesa Bl/Camino Santa Fe	14	X	X	X	X	X				X
13219	921	Yes	Mira Mesa Bl/Viper Wy	4	X	X	X	X	X				
13220	921	Yes	Mira Mesa Bl/Flanders Dr	4	X	X	X	X	X		X		X
13221	237, 921	Yes	Mira Mesa Bl/Genetic Center Dr	15	X	X	X	X	X	X	X	X	
13222	921	Yes	Mira Mesa Bl/Sequence Dr	2	X		X	X	X				
13223	237	Yes	Mira Mesa Bl/Pacific Heights Bl	13	X	X	X	X	X	X	X	X	
13226	921	Yes	Barnes Canyon Rd/Lusk Bl	15	X	X	X	X			X		
13227	921	No	Barnes Canyon Rd/10140	1	X	X							
13228	921	No	Barnes Canyon Rd/10030	1	X	X					X		
13229	921	Yes	Scranton Rd/9808	5	X	X	X	X			X		X
13230	921	Yes	Scranton Rd/Mira Sorrento Pl	3	X	X	X						

Stop ID	Route Number	Meets Standards?*	Stop Location	Boardings	Sign and Pole	Route Designation	Accesible	Bench	Expanded Sidewalk	Shelter	Time Table	Trash Container	Lighting
13231	237, 921	Yes	Mira Mesa Bl/Scranton Rd	27	X	X	X	X	X		X		X
13321	31	Yes	Miramar Rd/Mitchner Way	11	X	X	X	X	X				X
60684	964	Yes	Zapata Av/Kelowna Rd	30	X	X	X	X	X				
60685	964	Yes	Kelowna Rd/Capricorn Wy	19	X	X	X	X	X				
60686	964	Yes	Camino Ruiz/Teresa Dr	9	X	X	X	X	X				
60687	964	Yes	Camino Ruiz/Hydra Ln	4	X	X	X						
60688	964	Yes	Camino Ruiz/Westmore Rd	5	X	X	X	X					
60689	964	Yes	Camino Ruiz/New Salem St	20	X	X	X	X					
60691	964	Yes	Gold Coast Dr/Westchester Av	2	X	X	X						
60693	964	Yes	Gold Coast Dr/Londonderry Av	1	X	X	X						
60694	964	Yes	Gold Coast Dr/Lipscomb Dr	2	X	X	X						
60695	964	Yes	Gold Coast Dr/Westonhill Dr	1	X	X	X						
60696	964	Yes	Gold Coast Dr/San Ramon Dr	4	X	X	X		X				X
60697	964	Yes	Gold Coast Dr/Drumcliff Av	0	X	X	X		X				
60700	964	Yes	Camino Ruiz/Hydra Ln	0	X	X	X		X				X
60702	964	Yes	Camino Ruiz/Westmore Rd	0	X	X	X	X					
60703	964	Yes	Camino Ruiz/New Salem St	16	X	X	X	X					X
60704	964	Yes	Camino Ruiz/Mira Mesa Bl	22	X	X	X	X	X				X
60705	964	Yes	Gold Coast Dr/Camino Ruiz	2	X	X	X	X			X		
60779	964	Yes	Gold Coast Dr/Camino Ruiz	35	X	X	X	X			X		
60780	964	Yes	Gold Coast Dr/Saluda Av	4	X	X	X		X				
60781	964	Yes	Gold Coast Dr/San Ramon Dr	4	X	X	X		X				X
60782	964	Yes	Gold Coast Dr/Gold Coast Wy	8	X	X	X						X
60783	964	No	Gold Coast Dr/Gold Coast Pl	6	X	X							X

Stop ID	Route Number	Meets Standards?*	Stop Location	Boardings	Sign and Pole	Route Designation	Accesible	Bench	Expanded Sidewalk	Shelter	Time Table	Trash Container	Lighting
60784	964	No	Gold Coast Dr/Londonderry Av	3	X	X							
60785	964	No	Gold Coast Dr/Westchester Av	2	X	X							
60786	964	Yes	Camino Ruiz/Capricorn Wy	13	X	X	X	X	X		X		
60844	964	Yes	Capricorn Way/Camino Ruiz	8	X	X	X		X				
90051	20	Yes	Mira Mesa Marketcenter	30	X	X	X	X	X		X		
98500	972	No	Barnes Canyon Rd/Lusk Blvd (After Turn Before Dr	3			X						
98502	972	No	Pacific Mesa Bl/Sorrento View Business Park (@ F	3			X						
98503	972	No	Pacific Center Ct/Pacific Center Bl (10309 @ Ele	2			X						X
98504	972	No	Pacific Center Ct/10450 (In Front Of Time Warner	11			X						
98505	972	No	Pacific Center Bl/Pacific Heights Bl	6									
98506	972	No	Pacific Center Bl/Mckellar Ct	1			X						
98507	972	No	Lusk Bl/Vista Sorrento Pkwy (@10525 Before Dvwy)	0			X						
98508	972	No	Lusk Bl/Wateridge Cir (After Intersection)	0			X						
98509	972	No	Lusk Bl/Telesis Ct (After Intersection)	0			X						
98510	972	No	Lusk Bl/Pacific Ctr Bl (@ Fire Hydrant Across Fr	0			X						
98511	972	No	Morehouse Dr/5590 (Pro-Sat & Comm Driveway)	0			X						
98512	972	No	Morehouse Dr/5510 (Fs Morehouse Tech Ctr Drvwy)	0									
98513	972	No	Barnes Canyon Rd/10225 (@ Mailboxes)	1			X						

Stop ID	Route Number	Meets Standards?*	Stop Location	Boardings	Sign and Pole	Route Designation	Accesible	Bench	Expanded Sidewalk	Shelter	Time Table	Trash Container	Lighting
98514	972	No	Lusk Bl/6455 (@ Qualcomm Design Ctr)	1									X
98515	972	No	Lusk Bl/Telesis Ct	13									
98517	973	No	Pacific Heights Bl/Mira Mesa Bl	9			X	X					X
98522	973	No	Oberlin Dr/5871 (@ Mailboxes)	10			X						
98525	973	No	6310 Nancy Ridge Dr (Nancy Ridge Tech Pk/6349)	5			X						
98526	973	No	6650 Nancy Ridge Dr/6767 (@ Fire Hydrant After D	0			X						
98527	973	No	Phage Biotechnology	0			X						
98549	972	No	5910 Pacific Center Bl	2			X						
98550	972	No	5788 Pacific Center Bl	4			X						
98551	973	No	Pacific Heights Bl/Cornerstone Ct	1			X						
98552	973	No	Brown Deer Rd/Ferris Sq	1			X						
98553	973	No	9215 Brown Deer Rd	3			X						
98554	973	No	9339 Carroll Park Dr	1			X						
98555	973	No	9449 Carroll Park Dr	5			X						
98556	973	No	Nancy Ridge Dr/Carrol Rd (Carroll Ridge Bus Pk)	5									
98557	973	No	5960 Nancy Ridge Dr (Sorrento Vista Indu	5									
98558	973	No	5280 Carroll Canyon Rd	0			X						
98559	973	No	Youngstown Wy/Oberlin Dr	3			X						
98560	973	No	5807 Oberlin Dr	1			X						
99036	110	Yes	Camino Santa Fe/Flanders Dr	0	X	X	X	X					X
99041	31	Yes	Miramar Rd/Camino Ruiz	5	X	X	X	X	X				X

Stop ID	Route Number	Meets Standards?*	Stop Location	Boardings	Sign and Pole	Route Designation	Accesible	Bench	Expanded Sidewalk	Shelter	Time Table	Trash Container	Lighting
99042	31	No	Miramar Rd/Black Mountain Rd	24	X	X							
99061	921	No	Pacific Heights Bl/Mira Mesa Bl	4			X						
99156	31	Yes	Miramar Rd/Clayton Dr	3	X	X	X						
99157	31	No	Miramar Rd/Empire St	1									
99202	237	Yes	Mira Mesa Bl/Lusk Bl	8	X	X	X	X	X		X		
99266	964	Yes	Camino Ruiz/Calle Morelos	0	X	X	X						
99267	964	No	Camino Ruiz/Calle Morelos	5	X	X							
99268	964	Yes	Zapata Av/Camino Ruiz	7	X	X	X						X
99270	921	No	Barnes Canyon Rd/Pacific Heights Bl	25	X	X		X					
99271	921, 972	No	Barnes Canyon Rd/Pacific Heights Bl	43	X	X		X					
99382	110	Yes	Camino Santa Fe/Mira Mesa Bl	1	X	X	X						
99394	20, 964	Yes	Westview Pkwy/Mira Mesa MarketCenter	25	X	X	X	X	X				

Legend:

X	Meets minimum standard
	Does not meet minimum standard
X	Amenity exceed minimum standard
	Amenity not required per minimum standard

4.3.4 QUALITY CONNECTIONS TO TRANSIT

To access the transit system, passengers in the community must walk or bike to a transit stop. High-stress and missing connections in the bicycle and pedestrian networks limit the areas accessible by transit and depresses ridership. First-mile and last-mile connections in the community were assessed by considering the connectivity of bicycle and pedestrian facilities in the areas around major transit stops.

The quality connections assessment draws from the quality walking analysis and quality bicycle analysis results from **Section 4.1.4** and **Section 4.2.3** to identify quality ¼-mile pedestrian and ¾-mile bicycle networks surrounding major transit stations. These travelshed distances were obtained from *San Diego Forward: The Regional Plan, Appendix U4 – SANDAG Regional Transit Oriented Development Strategy*, and represent a five-minute travel distance for pedestrians and cyclists.

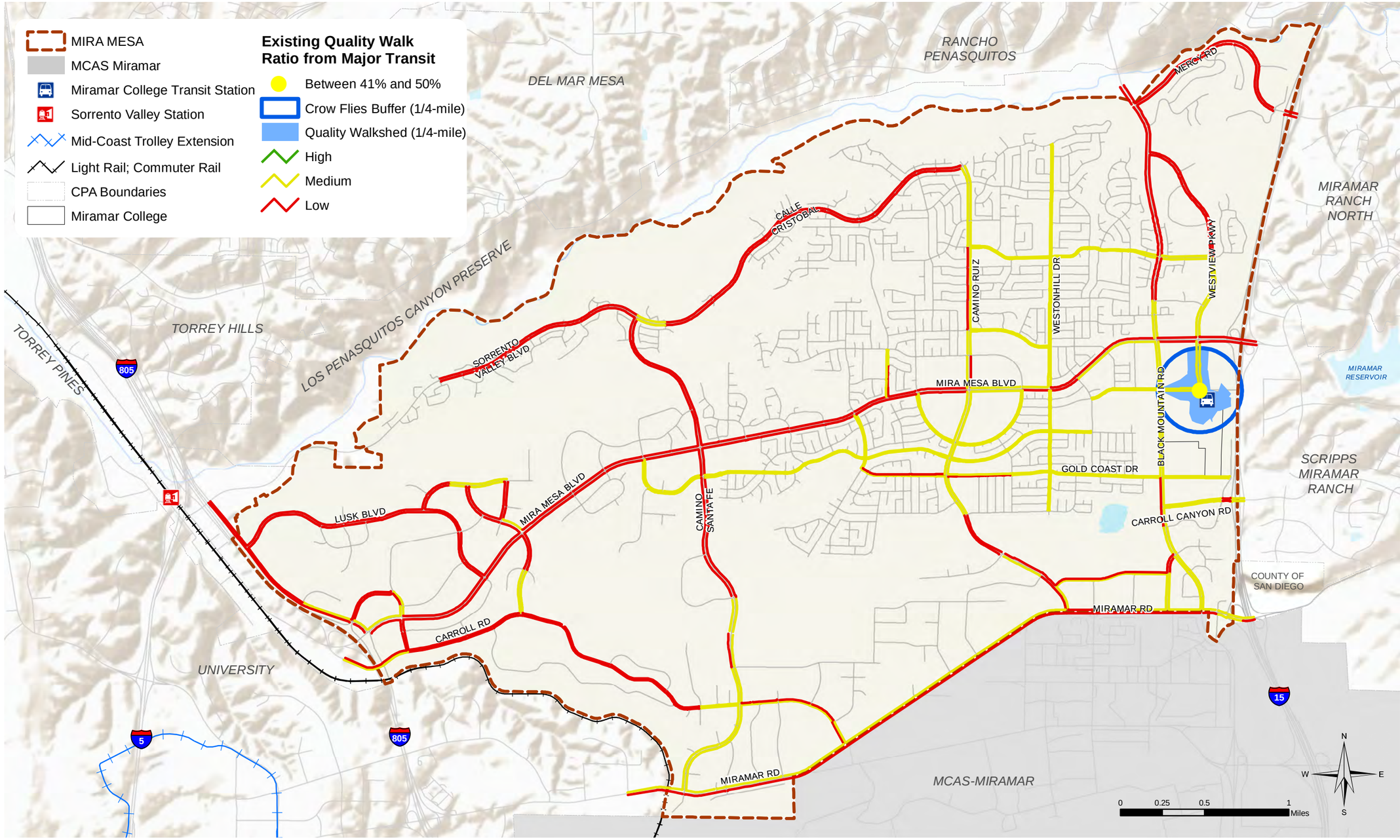
A major transit station is defined in part as "the intersection of two or more major bus routes each having a frequency of service of 15 minutes or less during the morning and afternoon peak commute periods." The Mira Mesa community has one location that meets this criteria at the Miramar College Transit Station. The existing Quality Walk and Bicycle Ratios are presented in **Table 4-24** and illustrated in **Figure 4-28** and **Figure 4-29**. The total acres represents the acres within the crow flies buffer for walk and bicycle. The quality acres represents the total acres within the quality walkshed and quality bikeshed.

The Miramar College Transit Station has quality connections from the adjacent Miramar College and medium-quality environment on the adjacent public roads. Overall, it is considered well connected with an existing Quality Walk Ratio of 44 percent. The existing Quality Bicycle Ratio is zero percent. This is due to the fact that the existing LTS along all four legs of the intersection of Hillery Drive and Westview Parkway have high levels of stress for bicyclists of LTS 3 or 4. The high stress is primarily due to vehicle speeds and width of these roadways.

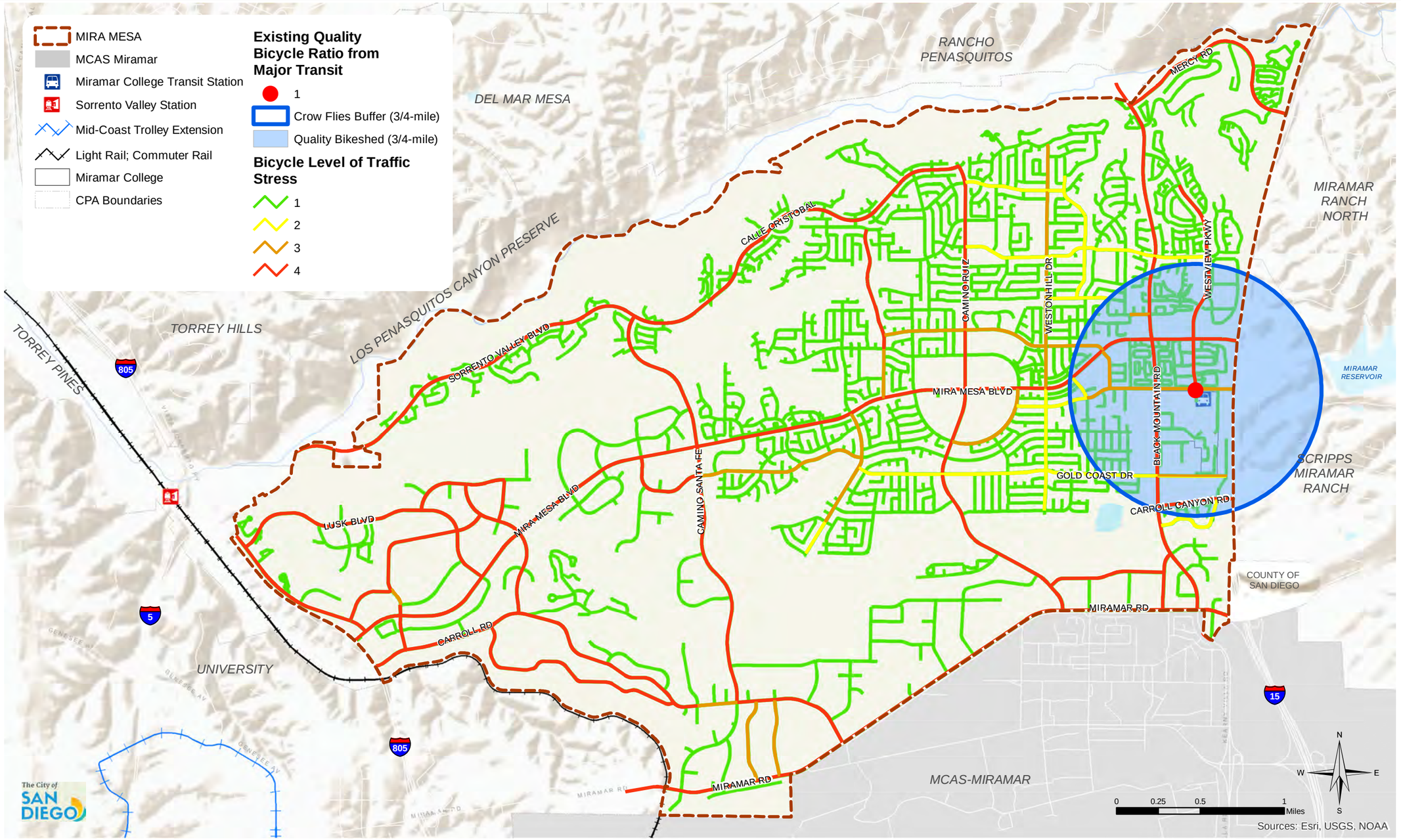
For the Sorrento Valley Station, the Quality Walk Ratio and Quality Bicycle Ratio were not calculated because the station as well as connections to the station are outside of the community boundary. However, the facilities surrounding the station are low pedestrian quality facilities and high stress bike facilities making connectivity to the Sorrento Valley Station from the Mira Mesa community poor.

Table 4-24 Summary of Quality Travel Ratios from Major Transit Stop

Major Transit Stop	Mode of Access	Quality Acres	Total Acres	Quality Ratio
Miramar College	Walk	55.5	125.6	44%
	Bicycle	0	1,884	0%



Existing Quality Walk Ratio from Major Transit Stations



Existing Quality Bicycle Ratio from Major Transit Stations

4.4 VEHICULAR SYSTEM

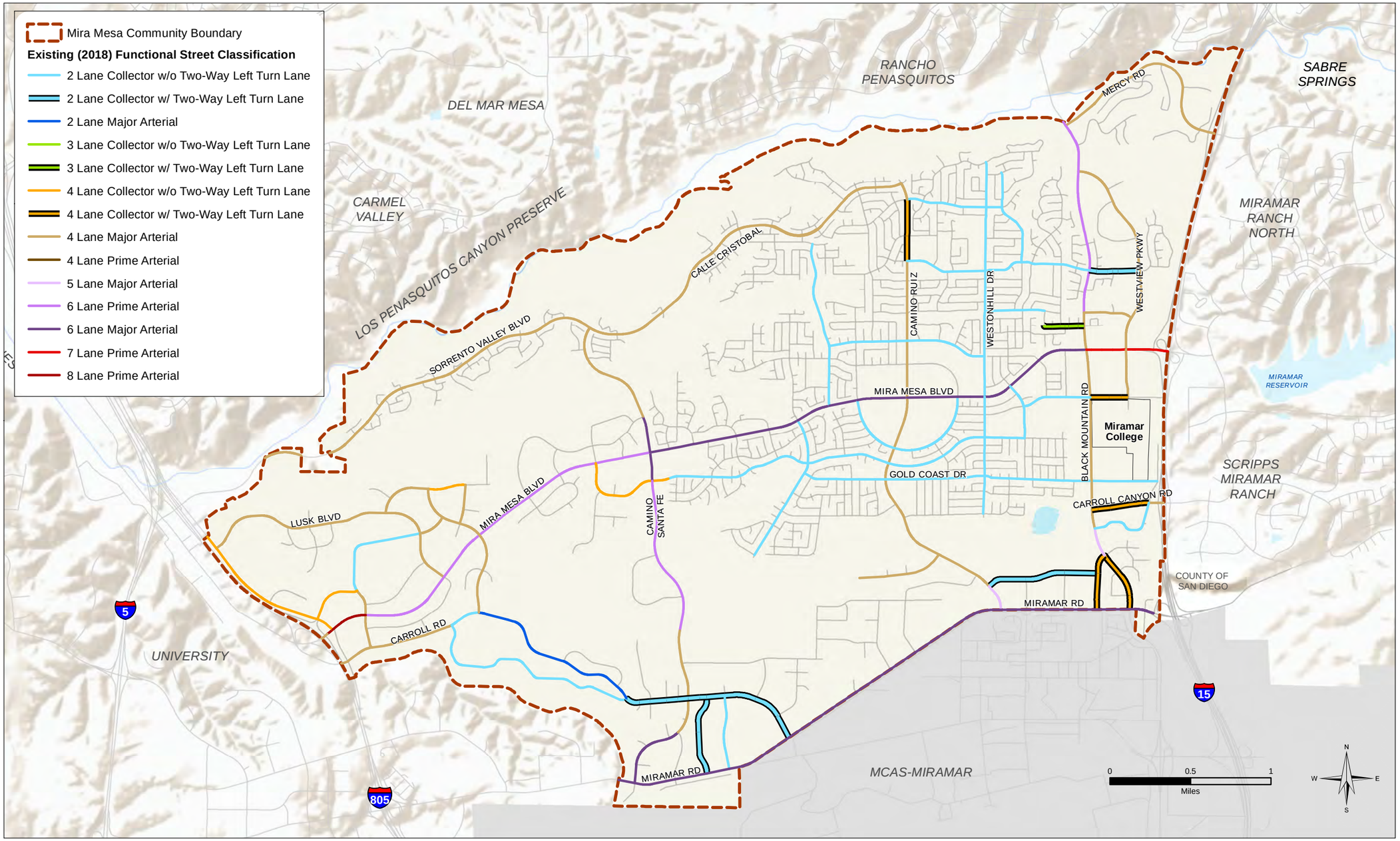
Maintaining efficient vehicular operations is vital to the economy. Local roadways and the regional freeway system provide an interconnected network used to move people and goods throughout the region.

Mira Mesa is readily accessible by freeway as it is bounded by I-15 and I-805 on the east and west of the community. Major roadways provide direct access to neighboring communities. However, Penasquitos Canyon on the north limits access between Mira Mesa and Rancho Penasquitos community, and MCAS Miramar, located on the southern border of the community limits access to southern communities.

This section describes the existing roadway network within the Mira Mesa community using the following evaluations:

Demand	• Using existing peak hour intersection information and daily roadway volume information
Safety	• Using vehicle collision data for the past five years
Quality	• Using roadway level of service based on volume-to-capacity ratio • Using roadway travel time level of service based on speed • Using intersection level of service based on delay • Using freeway level of service based on density • Using freeway ramp capacity based on volumes and queues
Connectivity	• Using vehicle miles travelled

It also describes the layout and operations of the roadway system, including the results of existing conditions analyses at the study area intersections, roadway segments, corridors and freeways. **Figure 4-30** presents a summary of the existing roadway classifications for the study area roadways within the Mira Mesa community, and **Table 4-25** provides a description of the existing roadway characteristics within the community.



Existing Roadway Segment Classifications

Table 4-25 Existing Roadway Segment Characteristics

Road Segment	General Direction	From	To	Width (ft)	# of Lanes	Barrier Type	Shoulders?	Bike Lanes /Routes?	Parking?
Vista Sorrento Parkway	NB/SB	Sorrento Valley Blvd (N. Community Limit)	Lusk Blvd	55-65	4	Undivided	N	Y	N
	NB/SB	Lusk Blvd	Mira Sorrento Pl	55-75	3	Divided	N	Y	N
	NB/SB	Mira Sorrento Pl	Mira Mesa Blvd	95	4	Divided	N	Y	N
Sorrento Valley Blvd	NB/SB	West of Western Community Limit	I-805	68	4	Undivided	N	Y	N
	EB/WB	I-805	Camino Santa Fe	67-87	4	Divided	N	Y	N
Lusk Blvd	EB/WB	Vista Sorrento Pkwy	Pacific Center Blvd	78	4	Divided	N	Y	N
	EB/WB NB/SB	Pacific Center Blvd	Barnes Canyon Rd	63	4	Divided	N	Y	N
	NB/SB	Barnes Canyon Rd	Mira Mesa Blvd	68-78	4	Divided	N	Y	N
Mira Sorrento Pl	EB/WB	Vista Sorrento Pkwy	Scranton Rd	71	4	Divided	N	Y	N
Scranton Rd	NB/SB	Barnes Canyon Rd	Mira Sorrento Pl	44	2	Undivided	N	N	Y
	NB/SB	Mira Sorrento Pl	Mira Mesa Blvd	55-80	3-5	Divided	N	Y	N
	NB/SB	Mira Mesa Blvd	Carroll Canyon Rd	78	4	Divided	N	N	N
Barnes Canyon Rd	EB/WB	Scranton Rd	Lusk Blvd	43	2	Undivided	Y	N	Y
	EB/WB	Lusk Blvd	Pacific Heights Blvd	84	4	Divided	N	N	Y
Pacific Center Blvd	NB/SB EB/WB	Lusk Blvd	Pacific Heights Blvd	77-82	4	Divided	N	N	Y
	EB/WB	Pacific Heights Blvd	Pacific Mesa Blvd	77-80	4	Divided	N	N	Y
Pacific Heights Blvd	NB/SB	Pacific Center Blvd	Barnes Canyon Rd	77-87	4	Divided	N	N	Y
	NB/SB	Barnes Canyon Rd	Mira Mesa Blvd	87-109	4	Divided	N	N	Y
	NB/SB	Mira Mesa Blvd	Carroll Canyon Rd	73-87	4	Divided	N	N	Y
Pacific Mesa Blvd	NB/SB	Pacific Heights Blvd	Pacific Center Blvd	77-80	4	Divided	N	N	Y
Calle Cristobal	EB/WB	Camino Santa Fe	Acama Ct	77-86	4	Divided	N	Y	N
	EB/WB	Acama Ct	Camino Ruiz	77	4	Divided	N	Y	N
Mira Mesa Blvd	EB/WB	I-805	Scranton Rd	93-140	7	Divided	N	Y	N
	EB/WB	Scranton Rd	Lusk Blvd	102	6	Divided	N	Y	N

Road Segment	General Direction	From	To	Width (ft)	# of Lanes	Barrier Type	Shoulders?	Bike Lanes /Routes?	Parking?
	EB/WB	Lusk Blvd	Pacific Heights Blvd	102	6	Divided	N	Y	N
	EB/WB	Pacific Heights Blvd	Flanders Dr	102	6	Divided	N	Y	N
	EB/WB	Flanders Dr	Camino Santa Fe	101	6	Divided	N	Y	N
	EB/WB	Camino Santa Fe	Parkdale Ave	82-101	6	Divided	N	Y	N
	EB/WB	Parkdale Ave	Reagan Rd	82	6	Divided	N	Y	N
	EB/WB	Reagan Rd	Camino Ruiz	105	6	Divided	N	Y	N
	EB/WB	Camino Ruiz	New Salem St/Marauder Wy	106	6	Divided	N	Y	N
	EB/WB	New Salem St/Marauder Wy	Westonhill Dr	94	6	Divided	N	Y	N
	EB/WB	Westonhill Dr	Greenford Dr	82	6	Divided	N	Y	N
	EB/WB	Greenford Dr	Black Mountain Rd	93-105	6	Divided	N	Y	N
	EB/WB	Black Mountain Rd	Westview Pkwy	108-152	6	Divided	N	N	N
	EB/WB	Westview Pkwy	I-15	110-152	7	Divided	Y	N	N
	EB/WB	I-15	East of Eastern Community Limit	105	6	Divided	N	N	N
Carroll Canyon Rd	EB/WB	Sorrento Valley Rd/Mira Mesa Blvd	Scranton Rd	73-85	4	Divided/ Undivided	N	Y	N
	EB/WB	Scranton Rd	Nancy Ridge Dr (W)	63	4	Divided	N	Y	N
	EB/WB	Nancy Ridge Dr (W)	Pacific Heights Blvd	63	2	Divided	N	Y	N
	-	Pacific Heights Blvd	Camino Santa Fe	Does Not Exist					
	-	Camino Santa Fe	Juniper Creek Ln	Does Not Exist					
	EB/WB	Juniper Creek Ln	Camino Ruiz	101-115	4	Divided	N	Y	N
	-	Camino Ruiz	Black Mountain Rd	Does Not Exist					
	EB/WB	Black Mountain Rd	Maya Linda Rd	67	4	Divided	N	N	Y
	EB/WB	Maya Linda Rd	I-15	67-84	4	Divided	N	Y	N
	EB/WB	I-15	East of Eastern Community Limit	67	4	Divided	N	Y	N
Carroll Rd	EB/WB	Pacific Heights Blvd	Nancy Ridge Dr (E)	50-65	2-3	Divided	N	Y	N
	EB/WB	Nancy Ridge Dr (E)	Camino Santa Fe	50	2	Divided	N	Y	N
	EB/WB	Camino Santa Fe	Miramar Rd	50-63	2-3	Undivided / Divided	N	Y	N

Road Segment	General Direction	From	To	Width (ft)	# of Lanes	Barrier Type	Shoulders?	Bike Lanes /Routes?	Parking?
Nancy Ridge Dr	NB/SB EB/WB	Carroll Canyon Rd	Carroll Rd	43	2	Undivided	N	N	Y
Miramar Rd	EB/WB	West of Western Community Limit		105	6	Divided	N	Y	N
	EB/WB	Western Community Limit	Camino Santa Fe	102	6	Divided	N	Y	N
	EB/WB	Camino Santa Fe	Production Ave	102-108	6	Divided	N	Y	N
	EB/WB	Production Ave	Distribution Ave	102	6	Divided	N	Y	N
	EB/WB	Distribution Ave	Carroll Rd	102	6	Divided	N	Y	N
	EB/WB	Carroll Rd	Camino Ruiz	102	6	Divided	N	Y	N
	EB/WB	Camino Ruiz	Black Mountain Rd	102	6	Divided	N	Y	N
	EB/WB	Black Mountain Rd	Kearny Villa Rd	102	6	Divided	N	Y	N
	EB/WB	Kearny Villa Rd	I-15	95-110	5-6	Divided	Y	Y	N
	EB/WB	I-15	East of Eastern Community Limit	53-78	4	Undivided / Divided	N	Y	N
Flanders Dr	EB/WB	Mira Mesa Blvd	Camino Santa Fe	63	4	Undivided	N	Y	N
	EB/WB	Camino Santa Fe	Caminito Alvarez	67	4	Divided	N	Y	N
	EB/WB	Caminito Alvarez	Parkdale Ave	40-50	2	Undivided	N	Y	Y
	EB/WB	Parkdale Ave	Camino Ruiz	40	2	Undivided	N	N	Y
	EB/WB	Camino Ruiz	Westonhill Dr	40	2	Undivided	N	N	Y
	EB/WB	Westonhill Dr	Greenford Dr	40	2	Undivided	N	N	Y
Camino Santa Fe	NB/SB	Sorrento Valley Blvd/Calle Cristobal	Top Gun St	77	4	Divided	N	Y	N
	NB/SB	Top Gun St	Mira Mesa Blvd	77-101	4	Divided	N	Y	N
	NB/SB	Mira Mesa Blvd	Flanders Dr	101	6	Divided	N	Y	N
	NB/SB	Flanders Dr	Carroll Canyon Rd	101-112	6	Divided	N	Y	N
	NB/SB	Carroll Canyon Rd	Carroll Rd	82-106	4	Divided	N	Y	N
	NB/SB	Carroll Rd	Spectrum Ln	81	4	Divided	N	N	Y
	NB/SB	Spectrum Ln	Miramar Rd	101	6	Divided	N	N	Y
Parkdale Ave	NB/SB	Mira Mesa Blvd	Flanders Dr	40-62	2	Undivided	N	N	Y
	NB/SB	Flanders Dr	Osgood Wy	39	2	Undivided	N	N	Y
Production Ave	NB/SB	Carroll Rd	Miramar Rd	49	2	Divided	N	N	Y

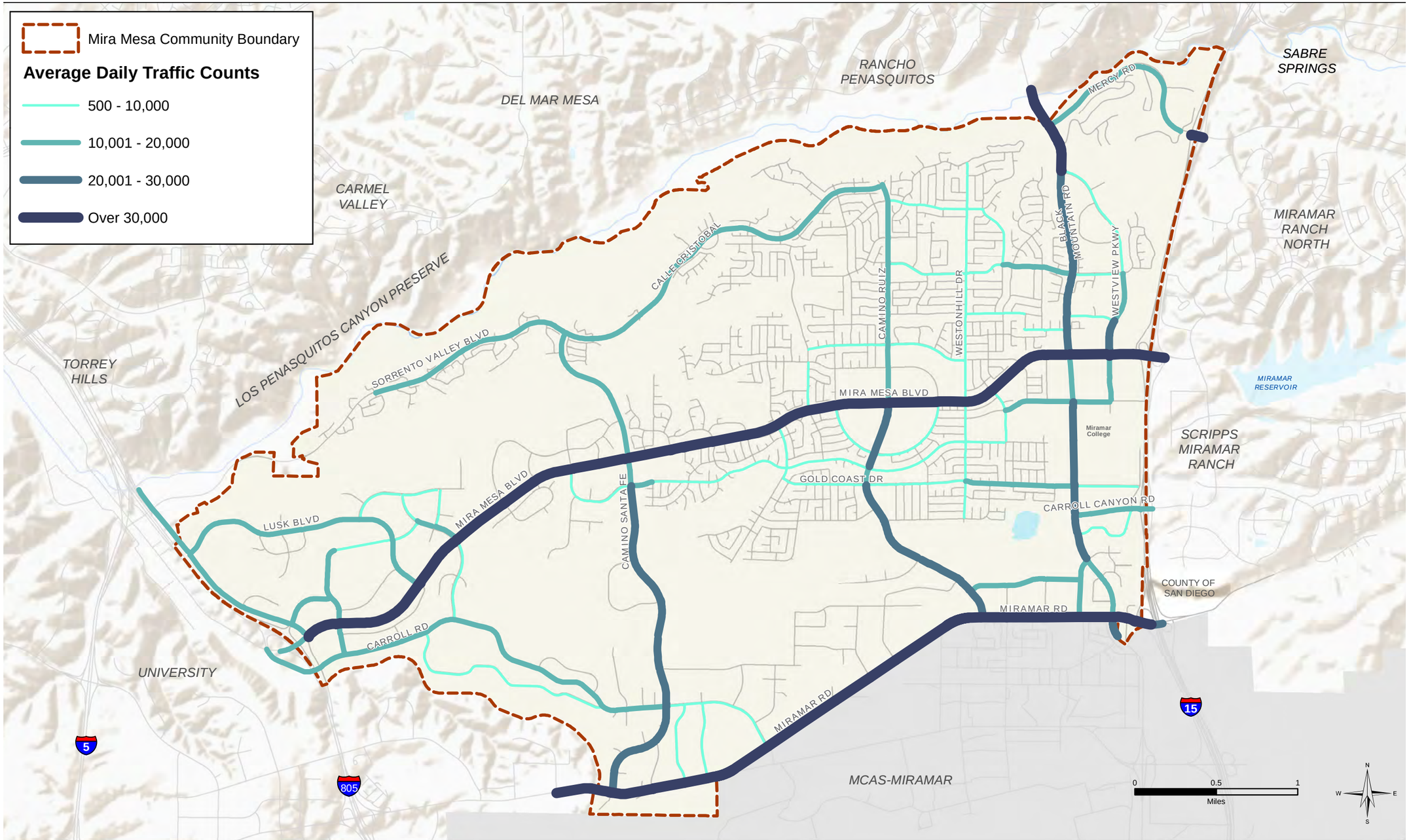
Road Segment	General Direction	From	To	Width (ft)	# of Lanes	Barrier Type	Shoulders?	Bike Lanes /Routes?	Parking?
Distribution Ave	NB/SB	Carroll Rd	Miramar Rd	49	2	Undivided	N	N	Y
Montongo St	NB/SB	Acama St	Westmore Rd	39	2	Undivided	N	N	Y
	NB/SB	Westmore Rd	Mira Mesa Blvd	39-63	2	Undivided	N	N	Y
Camino Ruiz	NB/SB	Calle Cristobal	Aquarius Dr	82-106	4	Divided	N	Y	N
	NB/SB	Aquarius Dr	Teresa Dr/Capricorn Wy	81	4	Divided	N	Y	Y (SB Only)
	NB/SB	Teresa Dr/Capricorn Wy	Westmore Rd	81	4	Divided	N	Y	Y
	NB/SB	Westmore Rd	Mira Mesa Blvd	82-106	4-5	Divided	N	Y	Y
	NB/SB	Mira Mesa Blvd	Reagan/Marauder Wy	93	4	Divided	N	Y	Y (SB Only)
	NB/SB	Reagan Rd/Marauder Wy	Flanders Dr	81	4	Divided	N	Y	N
	NB/SB	Flanders Dr	Gold Coast Dr	81	4	Divided	N	Y	N
	NB/SB	Gold Coast Dr	Carroll Canyon Rd	53-82	4	Divided	N	Y	Y
	NB/SB	Carroll Canyon Rd	Activity Rd	78-110	4	Divided	Y	Y	Y
	NB/SB	Activity Rd	Miramar Rd	78	5	Divided	N	Y	Y
Westmore Rd	EB/WB	Montongo St	Camino Ruiz	39-63	2	Undivided	N	N	Y
	EB/WB	Camino Ruiz	Westonhill Dr	39-63	2	Undivided	N	N	Y
Reagan Rd	NB/SB EB/WB	Mira Mesa Blvd	Camino Ruiz	39-63	2	Undivided	N	N	Y
Marauder Wy	NB/SB EB/WB	Camino Ruiz	Mira Mesa Blvd	39-63	2	Undivided	N	N	Y
Gold Coast Dr	EB/WB	Parkdale Ave	Camino Ruiz	39-63	2	Undivided	N	Y	Y
	EB/WB	Camino Ruiz	Westonhill Dr	39-63	2	Undivided	N	Y	Y
	EB/WB	Westonhill Dr	Black Mountain Rd	39-44	2	Undivided	N	Y	Y
	EB/WB	Black Mountain Rd	Maya Linda Rd	39-44	2	Undivided	N	Y	Y
Westonhill Dr	NB/SB	Menkar Rd	Aquarius Dr	39	2	Undivided	N	N	Y
	NB/SB	Aquarius Dr	Capricorn Wy	39	2	Undivided	N	N	Y
	NB/SB	Capricorn Wy	Libra Dr	39	2	Undivided	N	N	Y
	NB/SB	Libra Dr	Westmore Rd	39	2	Undivided	N	N	Y
	NB/SB	Westmore Rd	Mira Mesa Blvd	51-71	2-3	Undivided	N	N	Y
	NB/SB	Mira Mesa Blvd	Flanders Dr	39	2	Undivided	N	N	Y

Road Segment	General Direction	From	To	Width (ft)	# of Lanes	Barrier Type	Shoulders?	Bike Lanes /Routes?	Parking?
	NB/SB	Flanders Dr	Gold Coast Dr	39	2	Undivided	N	N	Y
	NB/SB	Gold Coast Dr	Jade Coast Dr	39	2	Undivided	N	N	Y
Aquarius Dr	EB/WB	Camino Ruiz	Westonhill Dr	39	2	Undivided	N	N	Y
	EB/WB	Westonhill Dr	Bootes Dt	39	2	Undivided	N	N	Y
Capricorn Wy	EB/WB	Camino Ruiz	Westonhill Dr	39-63	2	Undivided	N	N	Y
	EB/WB	Westonhill Dr	Bootes St	39	2	Undivided	N	N	Y
	EB/WB	Bootes St	Black Mountain Rd	36-71	2	Undivided	N	N	Y
	EB/WB	Black Mountain Rd	Westview Pkwy	71	2	Divided	N	N	Y
Bootes St	NB/SB	Aquarius Dr	Capricorn Wy	39	2	Undivided	N	N	Y
Libra Dr	EB/WB	Westonhill Dr	Hyades Wy	39	2	Undivided	N	N	Y
Greenford Dr	NB/SB	Mira Mesa Blvd	Hillery Dr	39	2	Undivided	N	N	Y
	NB/SB	Hillery Dr	Flanders Dr	39	2	Undivided	N	N	Y
Black Mountain Rd	NB/SB	North of Northern Community Limit		84	4	Divided	N	Y	N
	NB/SB	Northern Community Limit	Westview Pkwy	102	6	Divided	N	Y	N
	NB/SB	Westview Pkwy	Capricorn Wy	102	6	Divided	N	Y	N
	NB/SB	Capricorn Wy	Galvin Ave	102	6	Divided	N	Y	N
	NB/SB	Galvin Ave	Gemini Ave	81	4	Divided	N	Y	N
	NB/SB	Gemini Ave	Mira Mesa Blvd	88	4	Divided	N	Y	N
	NB/SB	Mira Mesa Blvd	Hillery Dr	81	4	Divided	N	Y	N
	NB/SB	Hillery Dr	Gold Coast Dr	78	4	Divided	N	Y	Y (SB Only)
	NB/SB	Gold Coast Dr	Carroll Canyon Rd	77	4	Divided	N	Y	Y (NB Only)
	NB/SB	Carroll Canyon Rd	Maya Linda Rd	78	4	Divided	N	Y	Y
	NB/SB	Maya Linda Rd	Black Mountain Rd/Carroll Centre Rd	88	5	Divided	N	Y	N
	EB/WB NB/SB	Black Mountain Rd/Kearny Villa Rd	Activity Rd	77	4	Divided	N	N	Y (SB Only)
	NB/SB	Activity Rd	Miramar Rd	77	4	Divided	N	N	Y
Kearny Villa Rd	NB/SB	Black Mountain Rd/Carroll Centre Rd	Miramar Rd	77	4	Divided	N	Y	Y (NB Only)

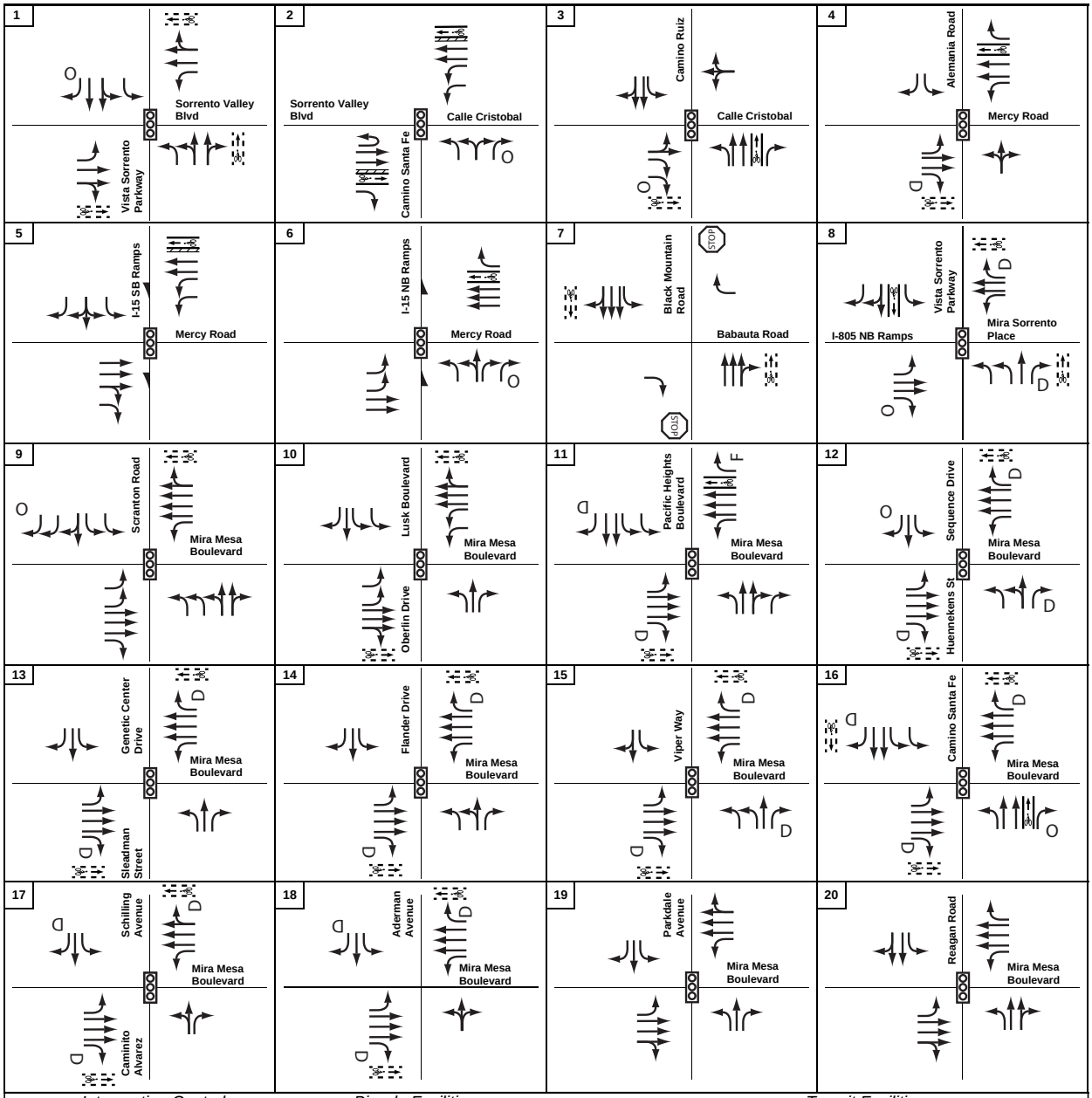
Road Segment	General Direction	From	To	Width (ft)	# of Lanes	Barrier Type	Shoulders?	Bike Lanes /Routes?	Parking?
	NB/SB	Miramar Rd	South of Southern Community Limit	81	4	Divided	N	Y	N
Gemini Ave	EB/WB	Hyades Wy	Black Mountain Rd	39-63	3	Divided	N	N	Y
Hillery Dr	EB/WB	Greenford Dr	Black Mountain Rd	39	2	Undivided	N	N	Y
	EB/WB	Black Mountain Rd	Westview Pkwy	71	3-4	Divided	N	Y	N
Activity Rd	EB/WB	Camino Ruiz	Black Mountain Rd	43-49	2	Divided	N	N	Y
Mercy Rd	EB/WB	Black Mountain Rd	I-15	77-109	4	Divided	N	Y	N
	EB/WB	I-15	East of Eastern Community Limit	102	4	Divided	N	Y	N
Westview Pkwy	EB/WB NB/SB	Black Mountain Rd	Capricorn Wy	71	4	Divided	N	N	Y
	NB/SB	Capricorn Wy	Galvin Ave	71	4	Divided	N	N	Y
	NB/SB	Galvin Ave	Mira Mesa Blvd	83	4	Divided	N	N	Y
	NB/SB	Mira Mesa Blvd	Hillery Dr	77-85	4	Divided	N	Y	N
Galvin Ave	EB/WB	Black Mountain Rd	Westview Pkwy	63-71	4	Divided	N	N	Y (WB Only)
Maya Linda Rd	NB/SB EB/WB	Carroll Canyon Rd	Black Mountain Rd	39	2	Undivided	N	N	Y

4.4.1 VEHICLE DEMAND

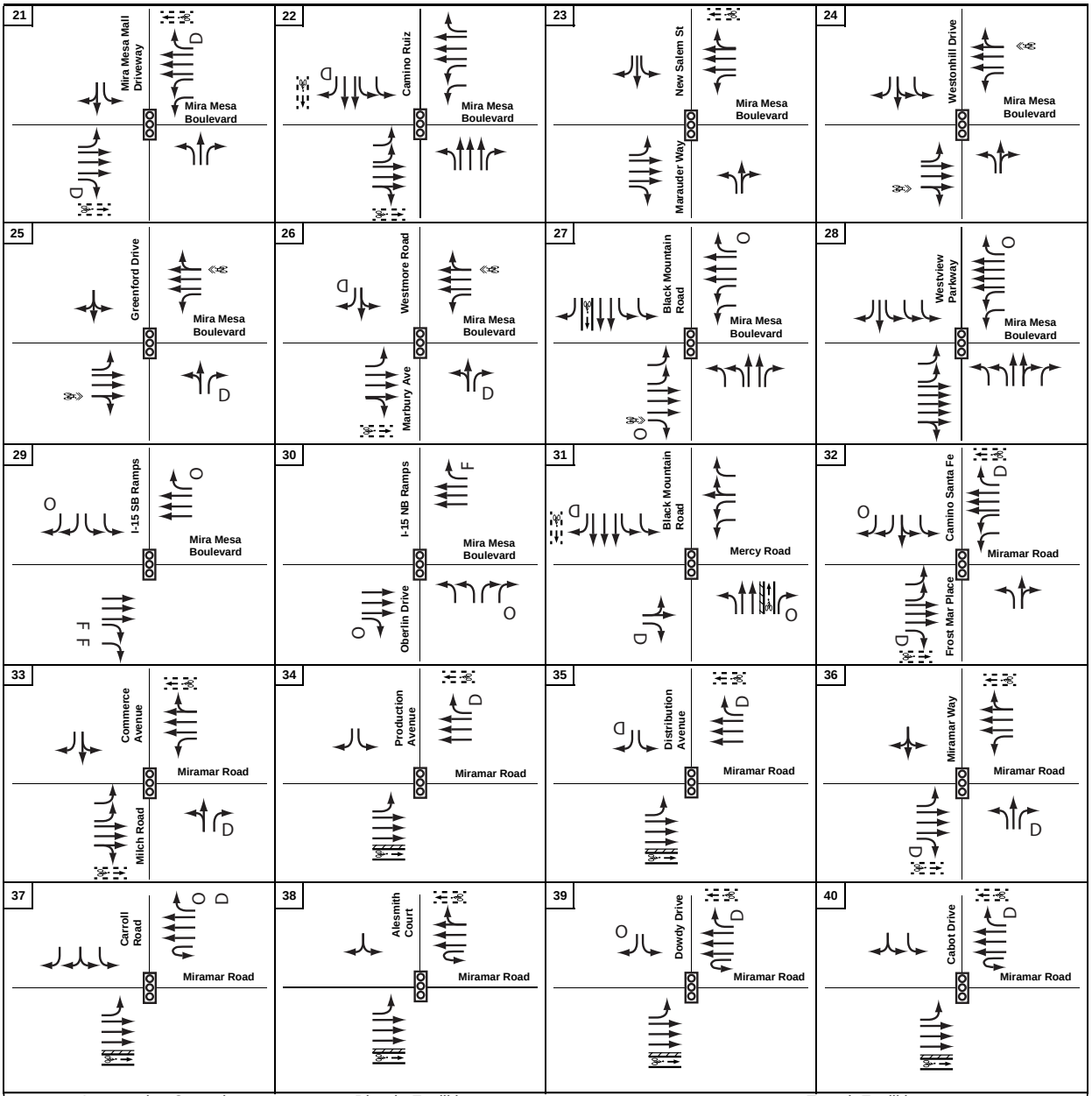
Average daily traffic counts along roadway segments, and AM and PM peak hour turning movement counts were collected in October and November 2018. All counts were taken on a Tuesday through Thursday on non-holiday weeks. These counts reflect typical weekday conditions when schools were in session. **Figure 4-31** presents the daily roadway segment volumes. **Figure 4-32** presents the existing intersection lane configuration for all study intersections that were used in the intersection analysis. **Figure 4-33** presents the AM and PM peak-hour traffic volumes, while **Figure 4-34** and **Figure 4-35** show the peak hour times that were identified for each intersection during the AM and PM peak periods, respectively. The existing traffic volume data is contained in **Appendix E**.



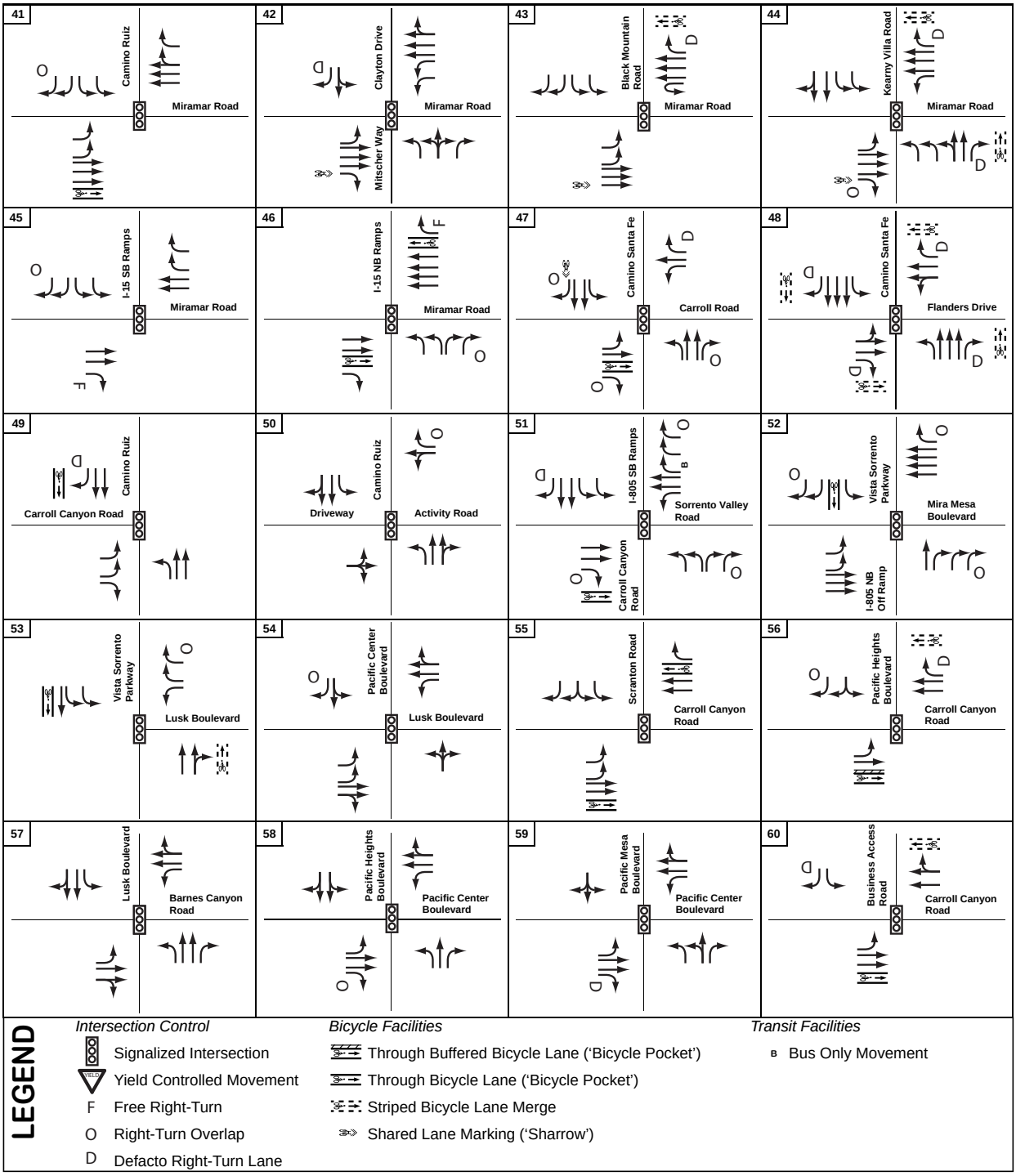
Existing Daily Roadway Segment Volumes



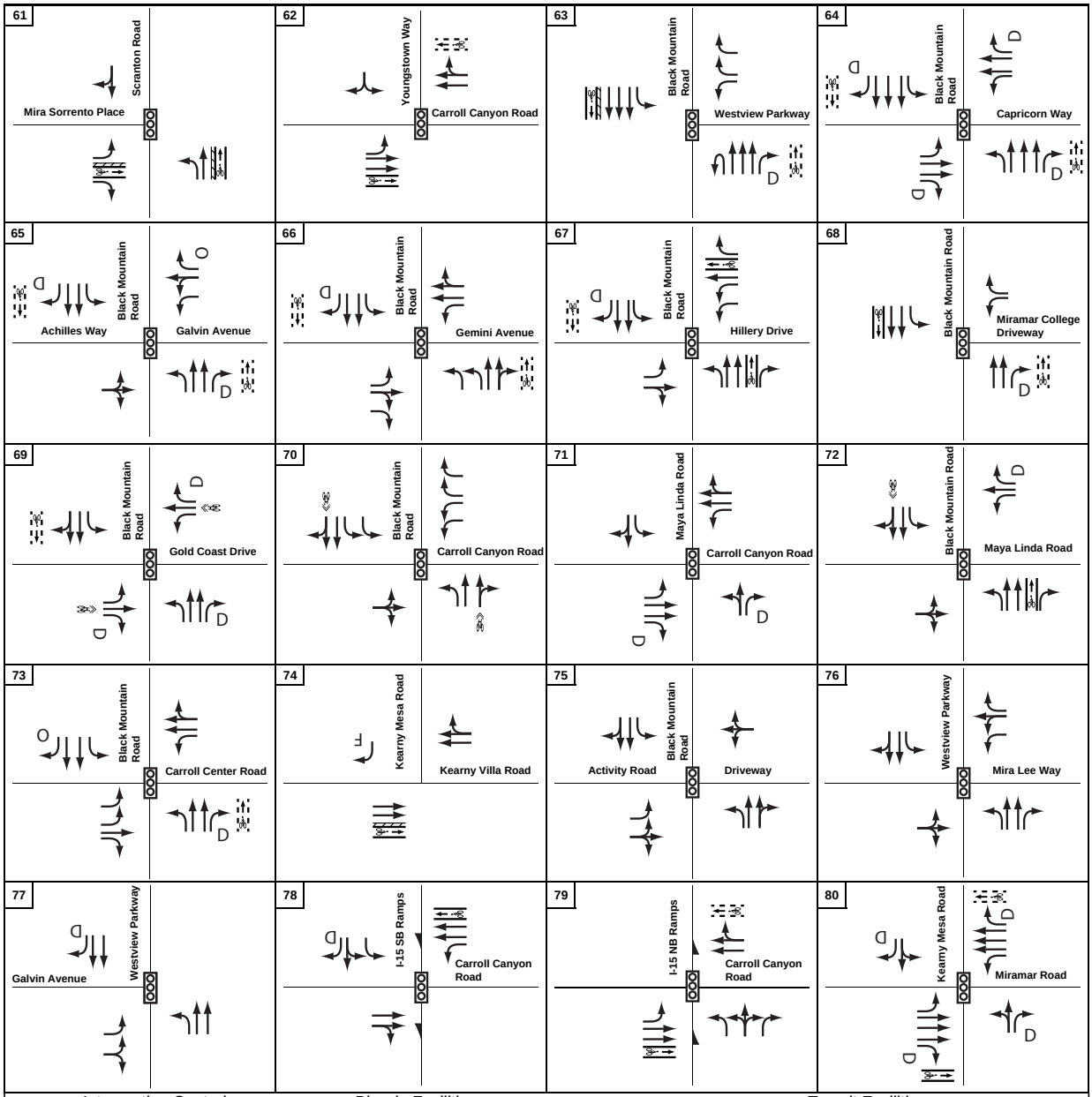
Existing Intersection Lane Configurations



Existing Intersection Lane Configurations



Existing Intersection Lane Configurations



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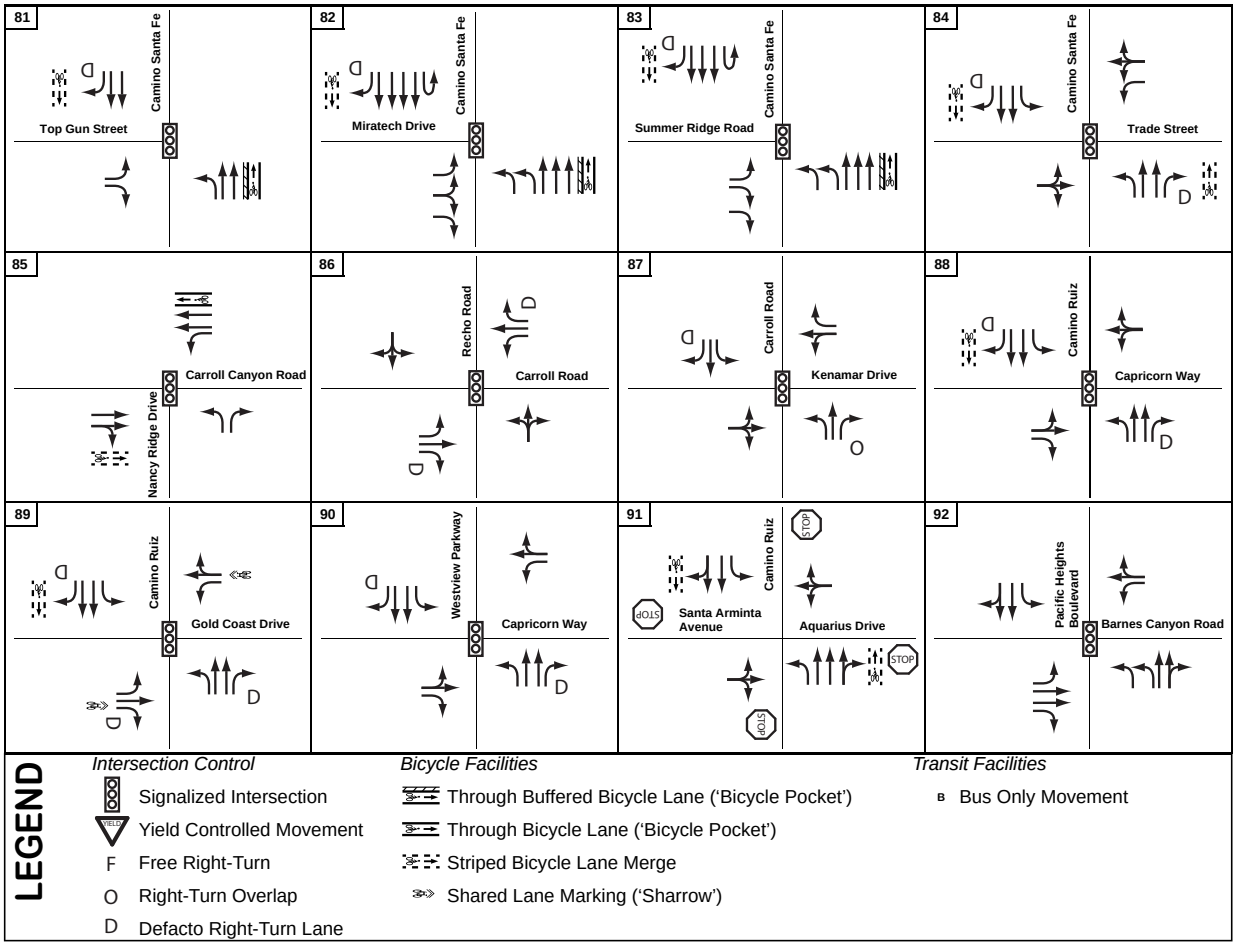
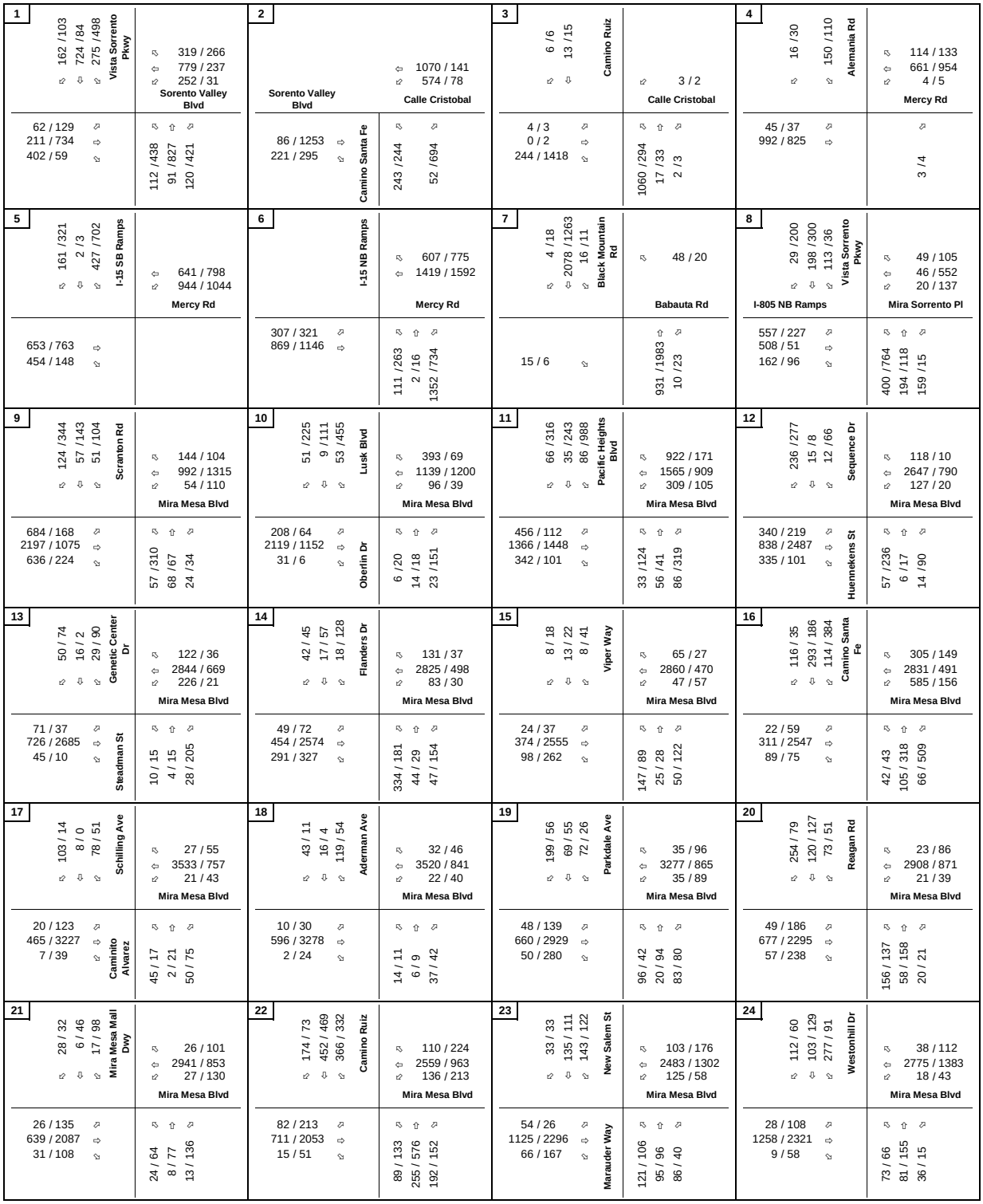
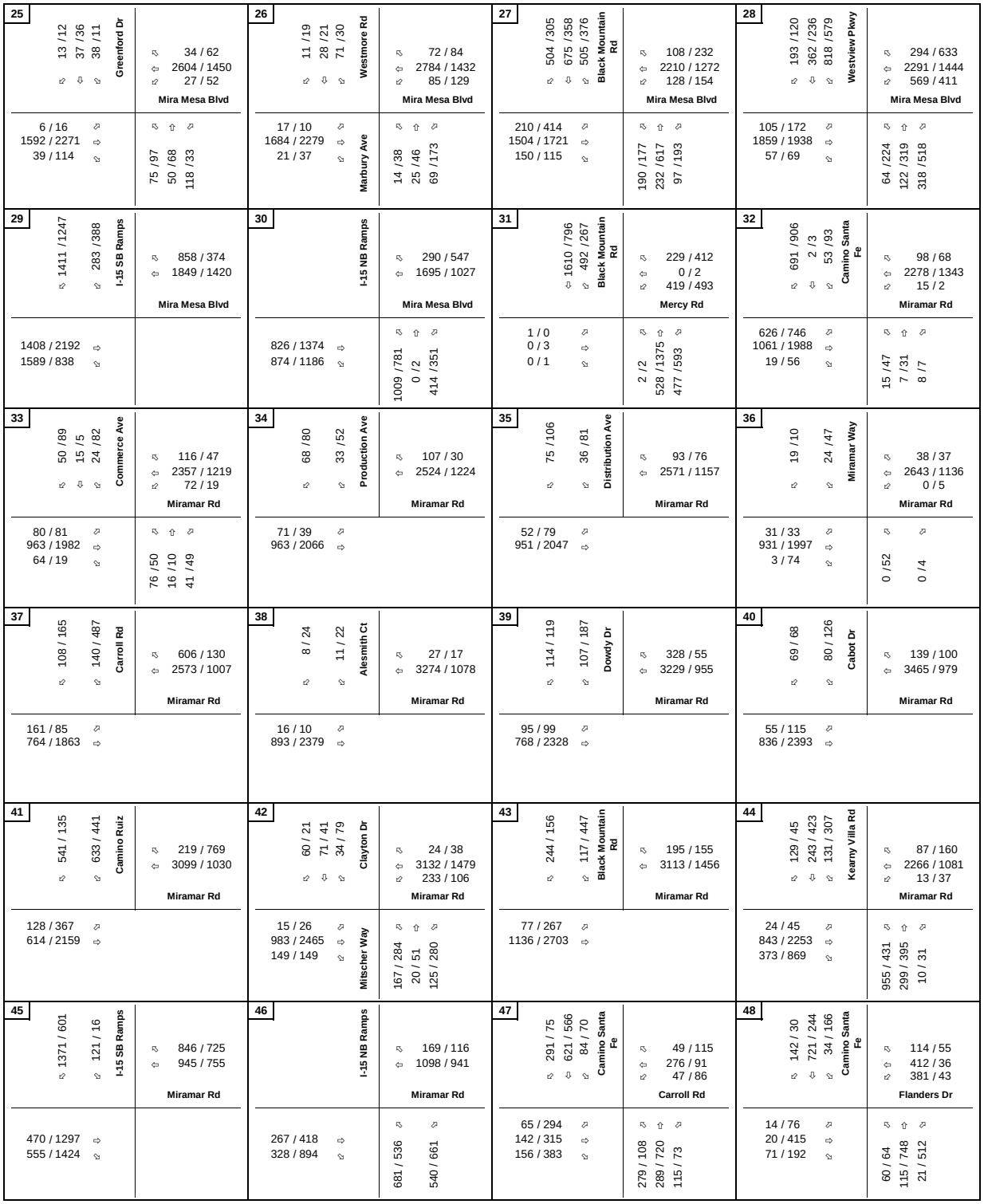


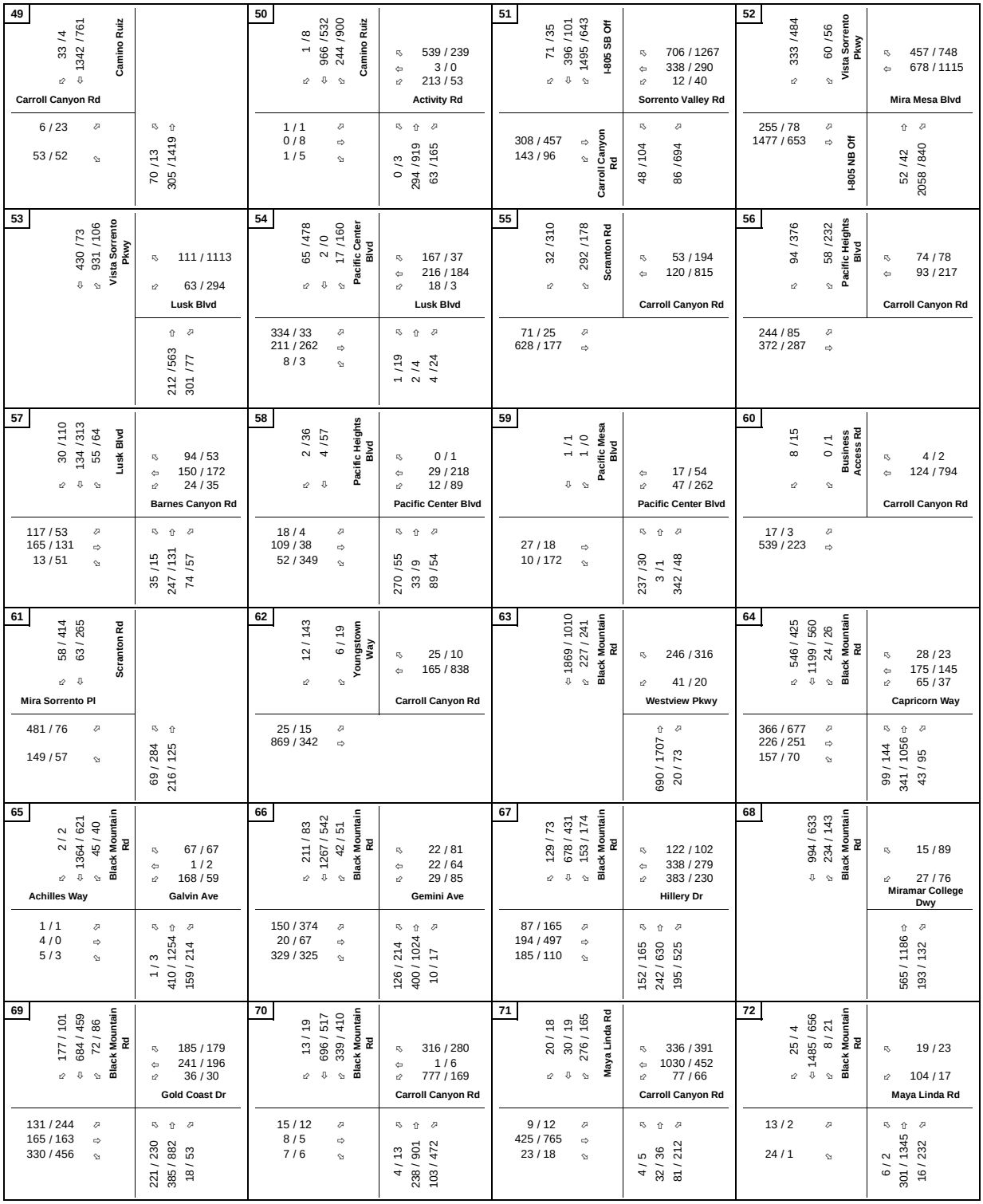
Existing Intersection Lane Configurations



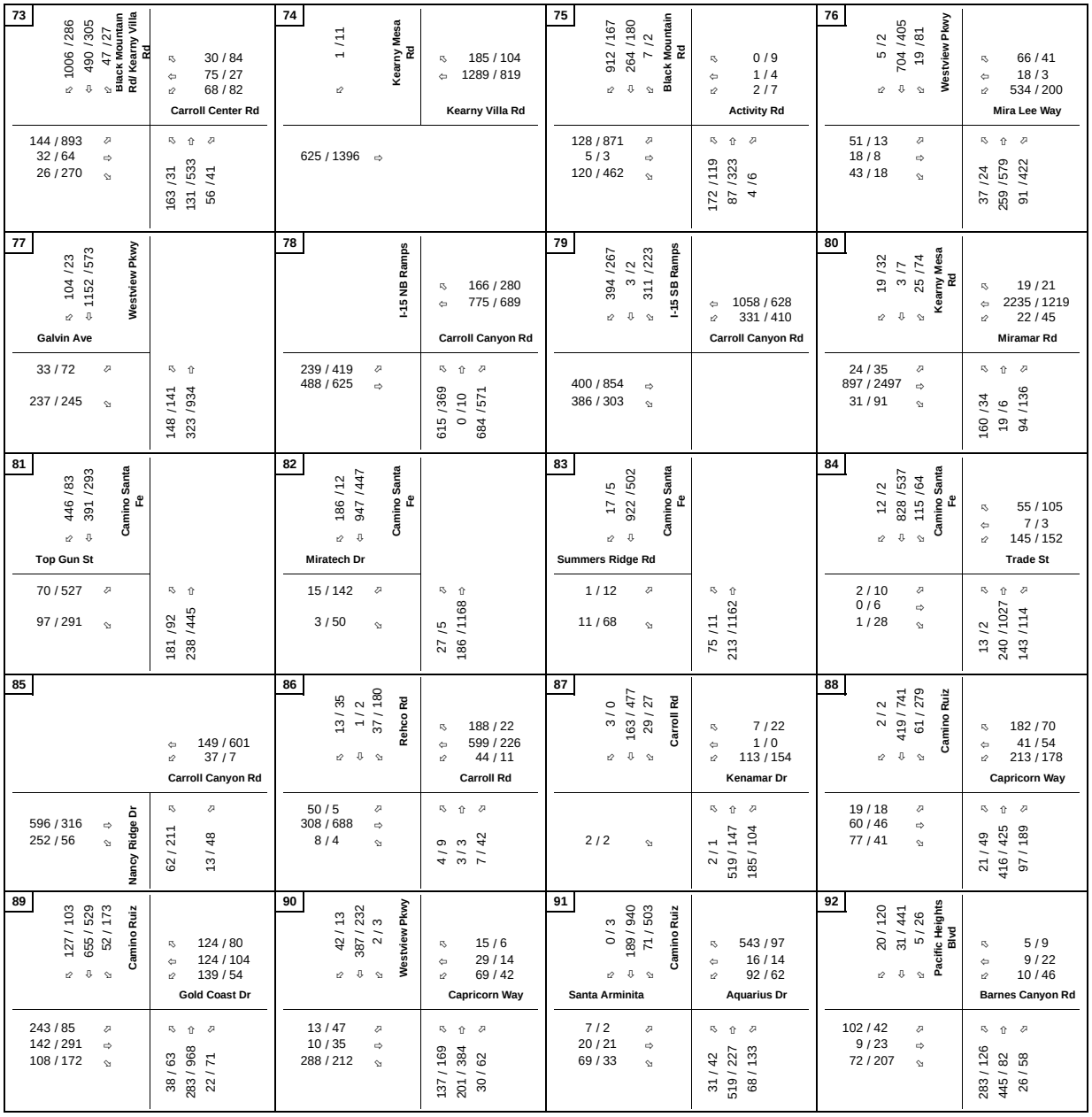
Existing Peak Hour Intersection Volumes



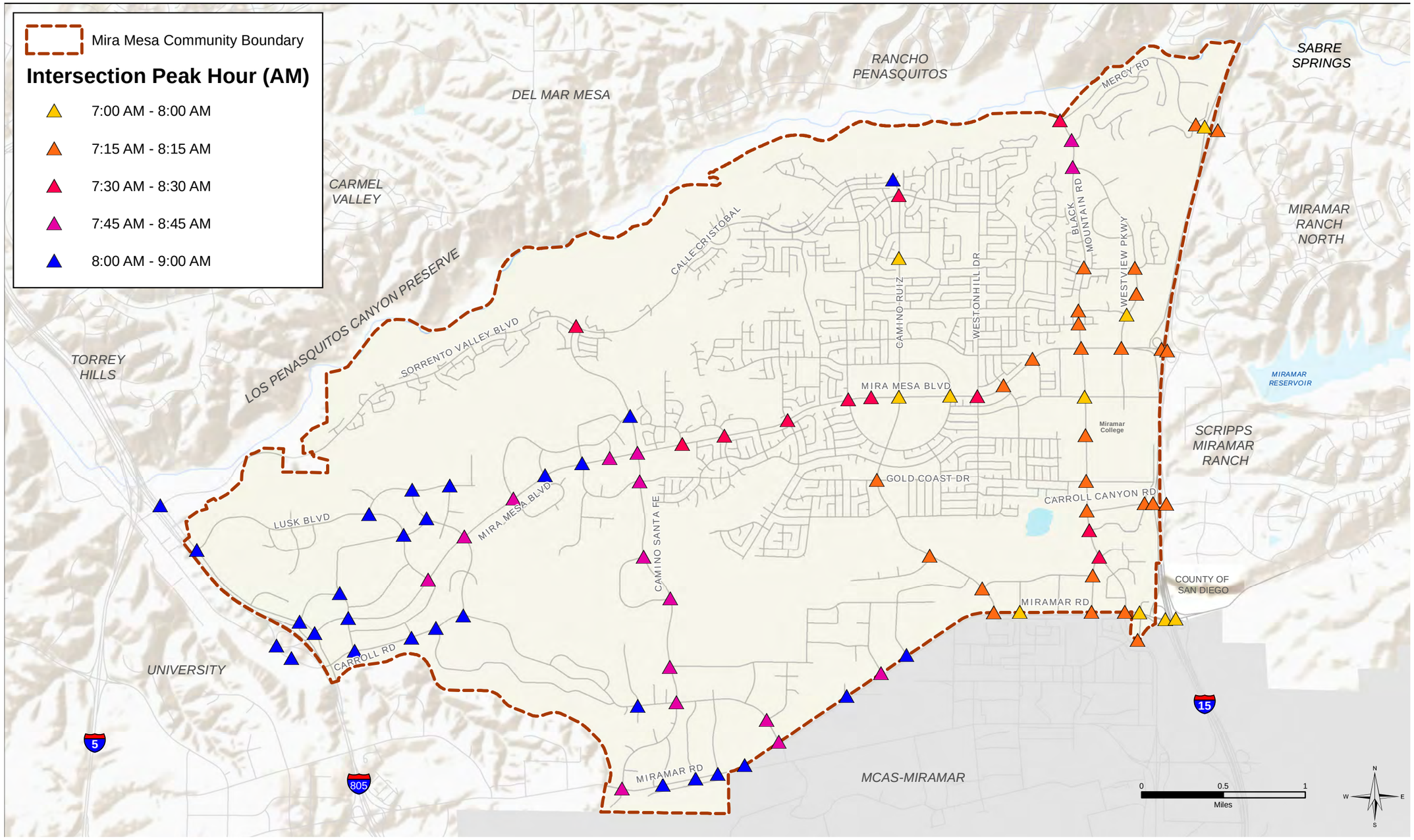
Existing Peak Hour Intersection Volumes



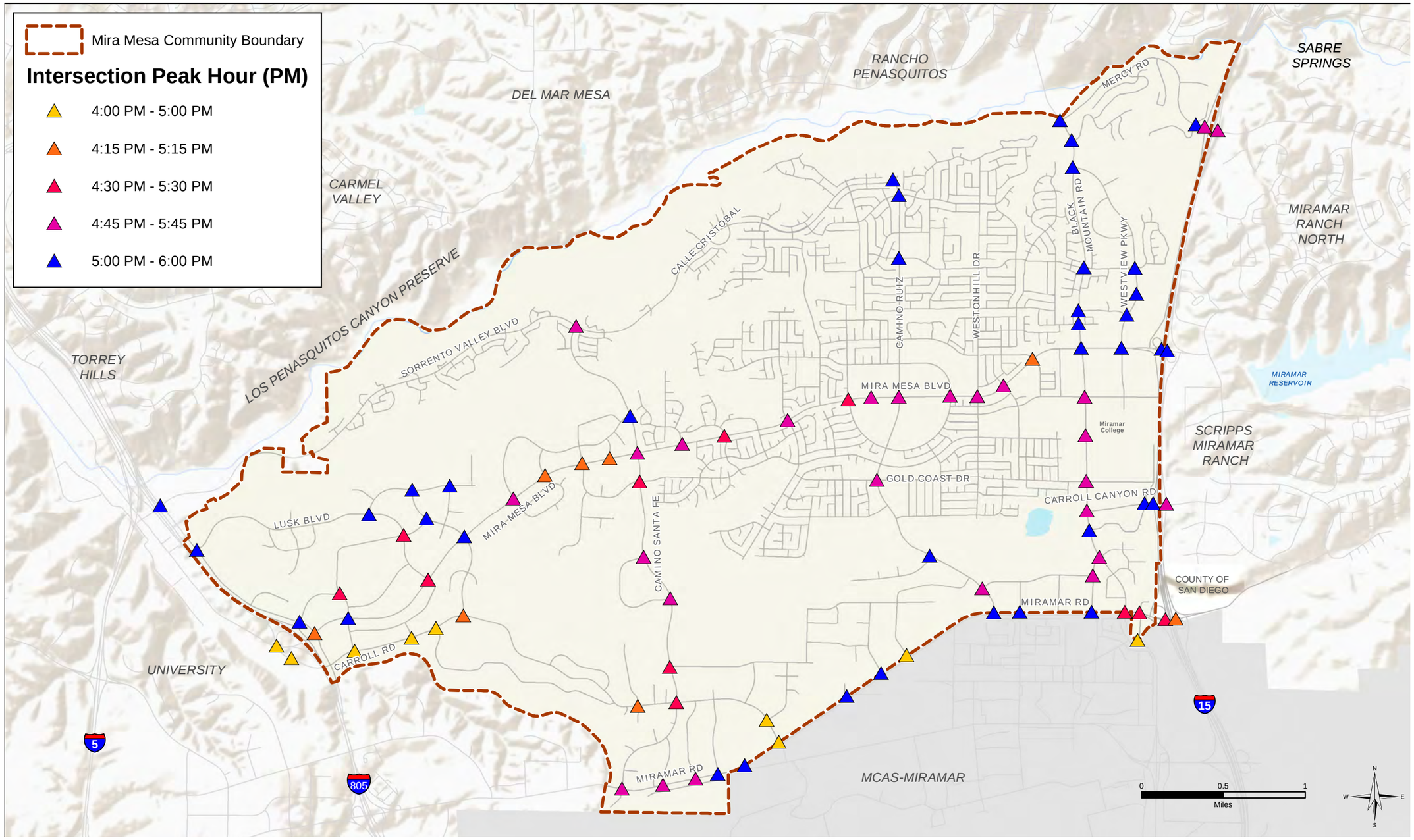
Existing Peak Hour Intersection Volumes



Existing Peak Hour Intersection Volumes



Existing Peak Hour Time Periods (AM Peak)



Existing Peak Hour Time Periods (PM Peak)

4.4.2 VEHICLE SAFETY

Between October 2012 and September 2017, there were a total of 2,029 reported vehicular collisions, excluding pedestrian- and bicycle-involved collisions, within the Mira Mesa community. In the State of California, collision reports must be generated for any collision where property damage totals 750 dollars or more, someone is injured, or someone is killed. As a result, it is important to note some incidents may go unreported for failing to meet one of these criteria.

Figure 4-36 displays the collisions across the community, symbolized by the number of crashes within 350 feet of the given location.

Many locations experienced multiple collisions in the five-year period. A collision within 350 feet of the intersection was considered for this ranking. The ten most frequent collision locations are identified in **Table 4-26**. As shown, the three intersections with the highest number of collisions all occur on Mira Mesa Boulevard. Mira Mesa Boulevard and Miramar Road are corridors that have a high number of intersection-related collisions.

Table 4-26 Most Frequent Vehicular Collision Locations

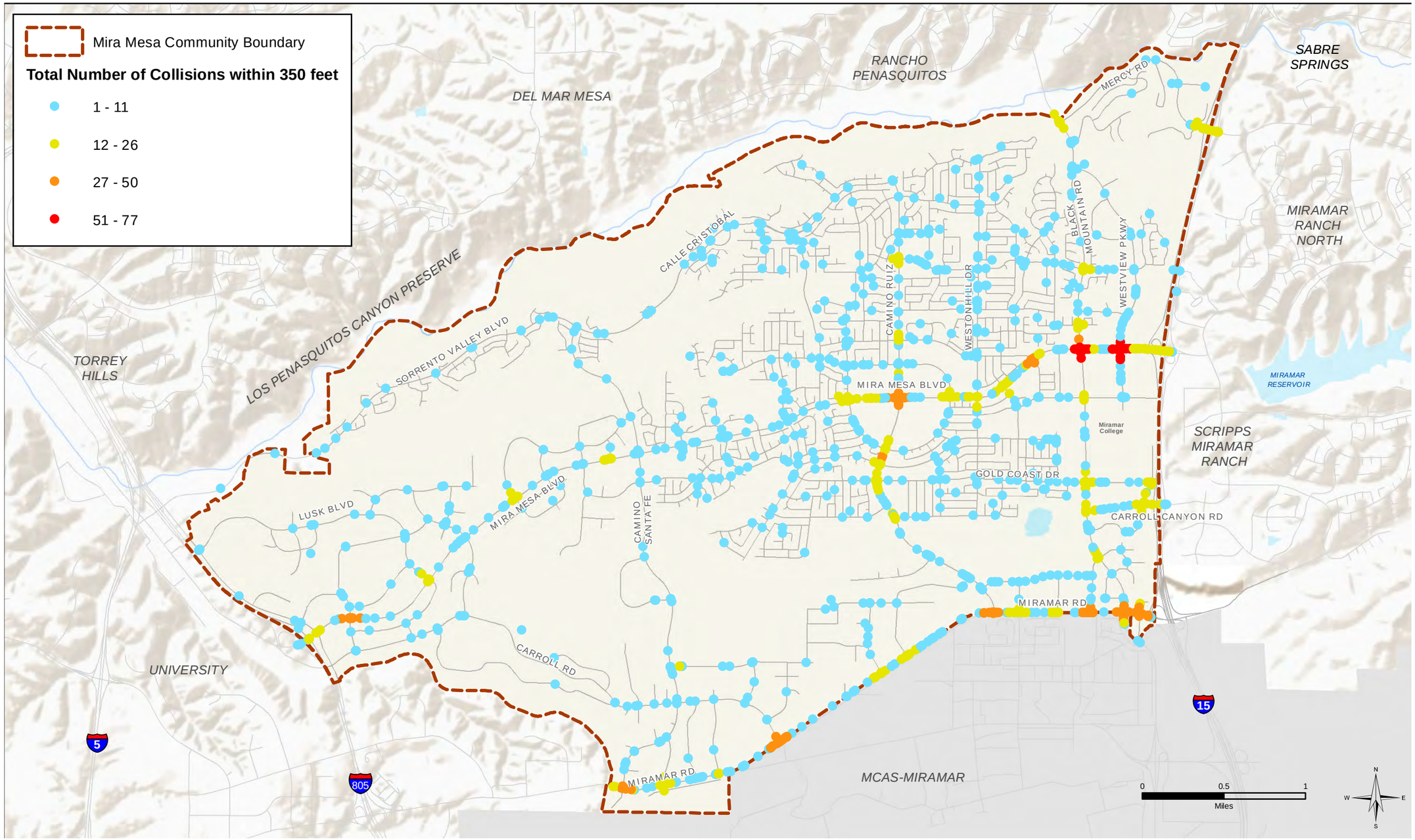
Rank	Intersections	Collisions*
1	Mira Mesa Blvd & Westview Pkwy	74
2	Mira Mesa Blvd & Black Mountain Rd	64
3	Mira Mesa Blvd & Camino Ruiz	42
4	Miramar Rd & Camino Ruiz	37
5	Miramar Rd & Carroll Rd	35
6	Miramar Rd & Black Mountain Rd	34
7	Mira Mesa Blvd & Scranton Rd	30
8	Miramar Rd & Kearny Villa Rd	29
9	Mira Mesa Blvd & Marbury Ave/Westmore Rd	29
10	Miramar Rd & Camino Santa Fe/Frost-Mar Pl	28

*Represents the number of collisions within 350 feet of the intersection

The reported collisions based on location types are summarized in **Table 4-27**. Location types include intersection, mid-block, and approaching/departing locations. Nearly three-quarters of all collisions occurred at intersections.

Table 4-27 Most Frequent Vehicular Collision Locations

Collision Location Type	Collisions	Percent of Total
Intersection	1,463	72%
Approaching/Departing	367	18%
Mid-Block	199	10%
Total	***2,029***	***100%***



Vehicle Collision Summary

A summary of the reported collisions categorized by party at fault is shown in **Table 4-28.**

Table 4-28 Collisions by Party at Fault

Party at Fault	Collisions	Percent of Total
Driver	1,069	53%
Bicyclist	25	1%
Parked Vehicle	169	8%
Pedestrian	31	2%
Other/Not Stated	735	36%
Total	***2,029***	***100%***

Table 4-29 displays the primary causes for vehicle involved collisions. As shown in the table, the top causes of collisions were improper turning, followed by unsafe speeds, and auto right-of-way violation.

Table 4-29 Primary Collision Cause

Primary Collision Cause	Number of Collisions	Percent of Total
Improper Turning	432	21%
Unsafe Speed	421	21%
Auto R/W Violation	343	17%
Not Stated	159	8%
Following Too Closely	107	5%
Traffic Signals and Signs	103	5%
Unsafe Lane Change	91	4%
Unsafe Starting or Backing	87	4.%
Unknown	53	3%
Other Hazardous Movement	49	2%
Other	43	2%
Driving Under Influence	31	2%
Pedestrian Violation	23	1%
Other Improper Driving	21	1%
Wrong Side of Road	19	<1%
Ped R/W Violation	16	<1%
Improper Passing	15	<1%
Other Than Driver	6	<1%
Impeding Traffic	4	<1%
Other Equipment	4	<1%
Fell Asleep	2	<1%
Total	***2029***	***100%***

Note: Collision data with causes labeled "Other" and those that were blank are combined.
"Other" = 24 Blank = 19

4.4.3 VEHICLE SYSTEM OPERATIONS (QUALITY)

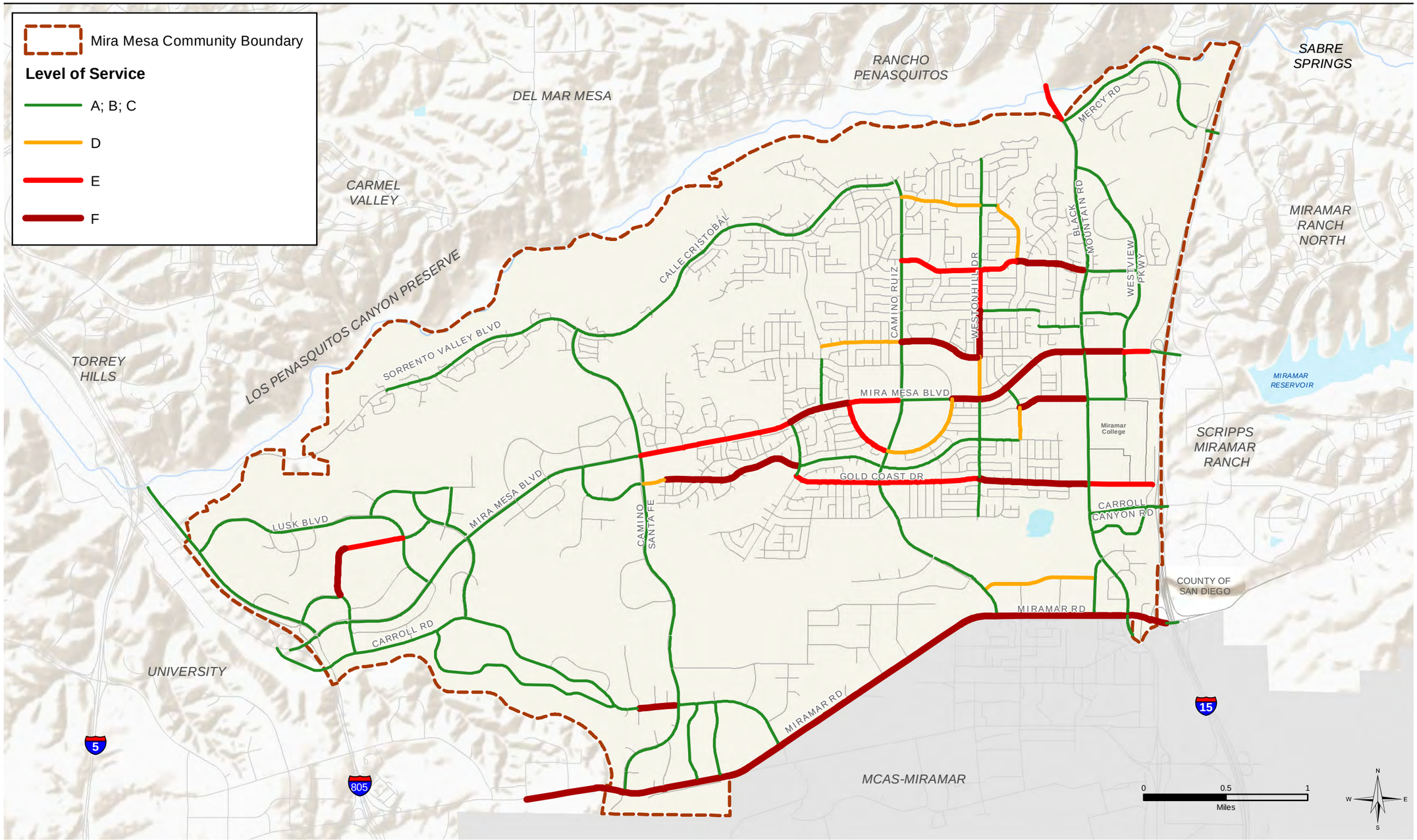
Each roadway segment in the study area was evaluated by comparing the daily traffic volume (ADT) with the roadway's theoretical capacity based on its classification. The capacity represents the maximum daily volume before the roadway is expected to begin to operate at a LOS E based on the number of lanes, speed, access points, and other physical features of the roadway. This volume-to-capacity comparison (v/c ratio) is a planning tool used to determine the general traffic demand on a segment and its sensitivity to delays. The v/c ratios are reported in terms of level of service (LOS), a quantitative measure representing the quality of service from the driver's perspective.

Table 4-30 presents the functional classification and other characteristics for each roadway segment, and the results of the roadway segment analysis for a typical weekday. As shown in the table, it is estimated that all roadway segments function at an acceptable LOS D or better in the study area, except for the following segments:

- Scranton Road – between Barnes Canyon Road to Mira Sorrento Place
  - 2 Lane Collector (w/o two-way left-turn lane) (LOS F)
- Barnes Canyon Road – Scranton Road to Lusk Boulevard
  - 2 Lane Collector (w/o two-way left-turn lane) (LOS E)
- Mira Mesa Boulevard – Camino Santa Fe to Parkdale Avenue
  - 6 Lane Major Arterial – (LOS E)
- Mira Mesa Boulevard – Parkdale Avenue to Reagan Road
  - 6 Lane Major Arterial – (LOS F)
- Mira Mesa Boulevard – Reagan Road to Camino Ruiz
  - 6 Lane Major Arterial – (LOS E)
- Mira Mesa Boulevard – New Salem Street/Marauder Way to Westview Parkway
  - 6 Lane Major Arterial – (LOS F)
- Mira Mesa Boulevard – Westonhill Dr to Greenford Dr
  - 6 Lane Major Arterial – (LOS F)
- Mira Mesa Boulevard – Greenford Dr to Black Mountain Road
  - 6 Lane Major Arterial – (LOS F)
- Mira Mesa Boulevard –Black Mountain Road to Westview Parkway
  - 6 Lane Major Arterial – (LOS F)
- Mira Mesa Boulevard – Westview Parkway to I-15 Ramps
  - 7 Lane Prime Arterial – (LOS E)
- Carroll Road – Nancy Ridge Drive (E) to Camino Santa Fe
  - 2 Lane Collector (w/ two-way left-turn lane) – (LOS F)
- Miramar Road – West of Western Community Limit
  - 6 Lane Major Arterial (LOS F)
- Miramar Road –Western Community Limit to Camino Santa Fe
  - 6 Lane Major Arterial (LOS F)
- Miramar Road – Camino Santa Fe to Production Avenue
  - 6 Lane Major Arterial (LOS F)
- Miramar Road – Production Avenue to Distribution Avenue
  - 6 Lane Major Arterial (LOS F)
- Miramar Road – Distribution Avenue to Carroll Road
  - 6 Lane Major Arterial (LOS F)

- Miramar Road – Carroll Road to Camino Ruiz
    - 6 Lane Major Arterial (LOS F)
- Miramar Road – Camino Ruiz to Black Mountain Road
    - 6 Lane Major Arterial (LOS F)
- Miramar Road – Black Mountain Road to Kearny Villa Road
    - 6 Lane Major Arterial (LOS F)
- Miramar Road – Kearny Villa Road to I-15
    - 6 Lane Major Arterial (LOS F)
- Flanders Drive – Caminito Alvarez to Parkdale Avenue
    - 2 Lane Collector (w/o two-way left-turn-lane) (LOS F)
- Westmore Road – Camino Ruiz to Westonhill Drive
    - 2 Lane Collector (w/o two-way left-turn lane) (LOS F)
- Reagan Road – Mira Mesa Boulevard to Camino Ruiz
    - 2 Lane Collector (w/o two-way left-turn lane) (LOS E)
- Gold Coast Drive – Parkdale Avenue to Camino Ruiz
    - 2 Lane Collector (w/o two-way left-turn lane) (LOS E)
- Gold Coast Drive –Camino Ruiz to Westonhill Dr
    - 2 Lane Collector (w/o two-way left-turn lane) (LOS E)
- Gold Coast Drive – Westonhill Drive to Black Mountain Road
    - 2 Lane Collector (w/o two-way left-turn lane) (LOS F)
- Gold Coast Drive – Black Mountain Road to Maya Linda Road
    - 2 Lane Collector (w/o two-way left-turn lane) (LOS E)
- Westonhill Drive – Capricorn Way to Libra Drive
    - 2 Lane Collector (w/o two-way left-turn lane) (LOS E)
- Westonhill Drive – Libra Drive to Westmore Road
    - 2 Lane Collector (w/o two-way left-turn lane) (LOS F)
- Capricorn Way – Camino Ruiz to Westonhill Drive
    - 2 Lane Collector (w/o two-way left-turn lane) (LOS E)
- Capricorn Way –Westonhill Drive to Bootes Street
    - 2 Lane Collector (w/o two-way left-turn lane) (LOS E)
- Capricorn Way – Bootes Street to Black Mountain Road
    - 2 Lane Collector (w/o two-way left-turn lane) (LOS F)
- Black Mountain Road – North of Northern Community Limit
    - 4 Lane Major Arterial (LOS E)
- Hillery Drive – Greenford Drive to Black Mountain Road
    - 2 Lane Collector (w/o two-way left-turn lane) (LOS F)

Figure 4-37 illustrates the existing LOS results for each of the roadway segments in the study area based on the volume-to-capacity analysis methodology. The segments with LOS E or F have volumes above their theoretical capacity, typically resulting in periods of congestion.



Existing Roadway Segment Level of Service

Table 4-30 Existing Roadway Segment Analysis

Roadway Segment	Functional Class	LOS E Capacity	ADT	V/C Ratio	LOS
Vista Sorrento Parkway					
North of Sorrento Valley Blvd.	4 Lane Major Arterial	40,000	15,635	0.391	B
Sorrento Valley Blvd (N. Community Limit) to Lusk Blvd	4 Lane Major Arterial	40,000	14,927	0.373	A
Lusk Blvd to Mira Sorrento Pl	3 Lane Collector (w/ TWLTL)	22,500	13,504	0.600	C
Mira Sorrento Pl to Mira Mesa Blvd	4 Lane Major Arterial	40,000	17,009	0.425	B
Sorrento Valley Blvd					
West of Western Community Limit to I-805 Ramps	4 Lane Collector (w/ TWLTL)	30,000	12,887	0.430	B
I-805 Ramps to Camino Santa Fe	4 Lane Major Arterial	40,000	15,764	0.394	B
Lusk Blvd					
Vista Sorrento Pkwy to Pacific Center Blvd	4 Lane Major Arterial	40,000	11,324	0.283	A
Pacific Center Blvd to Barnes Canyon Rd	4 Lane Major Arterial	40,000	10,630	0.266	A
Barnes Canyon Rd to Mira Mesa Blvd	4 Lane Major Arterial	40,000	11,068	0.277	A
Mira Sorrento Pl					
Vista Sorrento Pkwy to Scranton Rd	4 Lane Collector (w/ TWLTL)	30,000	10,145	0.338	B
Scranton Rd					
Barnes Canyon Rd to Mira Sorrento Pl	2 Lane Collector (w/o TWLTL)	8,000	10,870	1.359	**F**
Mira Sorrento Pl to Mira Mesa Blvd	5 Lane Major Arterial	45,000	18,296	0.407	B
Mira Mesa Blvd to Carroll Canyon Rd	4 Lane Major Arterial	40,000	10,303	0.258	A
Barnes Canyon Rd					
Scranton Rd to Lusk Blvd	2 Lane Collector (w/o TWLTL)	8,000	7,335	0.917	**E**
Lusk Blvd to Pacific Heights Blvd	4 Lane Major Arterial	40,000	6,924	0.173	A
Pacific Center Blvd					
Lusk Blvd to Pacific Heights Blvd	4 Lane Major Arterial	40,000	7,565	0.189	A
Pacific Heights Blvd to Pacific Mesa Blvd	4 Lane Collector (w/o TWLTL)	15,000	3,293	0.220	A
Pacific Heights Blvd					
Pacific Center Blvd to Barnes Canyon Rd	4 Lane Major Arterial	40,000	7,245	0.181	A
Barnes Canyon Rd to Mira Mesa Blvd	4 Lane Major Arterial	40,000	16,772	0.419	B
Mira Mesa Blvd to Carroll Canyon Rd	4 Lane Major Arterial	40,000	8,045	0.201	A
Pacific Mesa Blvd					
Pacific Heights Blvd to Pacific Center Blvd	4 Lane Major Arterial	40,000	9,398	0.235	A
Calle Cristobal					
Camino Santa Fe to Acama Ct	4 Lane Major Arterial	40,000	14,812	0.370	A
Acama Ct to Camino Ruiz	4 Lane Major Arterial	40,000	12,239	0.306	A
Mira Mesa Blvd					
I-805 Ramps to Scranton Rd	7 Lane Prime Arterial	87,000[d]	60,870	0.761	C
Scranton Rd to Lusk Blvd	6 Lane Prime Arterial	60,000	47,868	0.798	C
Lusk Blvd to Pacific Heights Blvd	6 Lane Prime Arterial	60,000	45,646	0.761	C
Pacific Heights Blvd to Flanders Dr	6 Lane Prime Arterial	60,000	41,338	0.689	C
Flanders Dr to Camino Santa Fe	6 Lane Prime Arterial	60,000	41,679	0.695	C
Camino Santa Fe to Parkdale Ave	6 Lane Major Arterial	50,000	47,281	0.946	**E**
Parkdale Ave to Reagan Rd	6 Lane Major Arterial	50,000	51,329	1.027	**F**
Reagan Rd to Camino Ruiz	6 Lane Major Arterial	50,000	45,330	0.907	**E**

Roadway Segment	Functional Class	LOS E Capacity	ADT	V/C Ratio	LOS
Camino Ruiz to New Salem St/Marauder Wy	6 Lane Major Arterial	50,000	31,552	0.631	C
New Salem St/Marauder Wy to Westonhill Dr	6 Lane Major Arterial	50,000	57,445	1.149	**F**
Westonhill Dr to Greenford Dr	6 Lane Major Arterial	50,000	57,200	1.144	**F**
Greenford Dr to Black Mountain Rd	6 Lane Major Arterial	50,000	60,335	1.207	**F**
Black Mountain Rd to Westview Pkwy	6 Lane Major Arterial	64,167[d]	70,632	1.101	**F**
Westview Pkwy to I-15 Ramps	7 Lane Prime Arterial	87,000[d]	78,516	0.902	**E**
I-15 Ramps to East of Eastern Community Limit	6 Lane Major Arterial	50,000	32,450	0.649	C
Carroll Canyon Rd					
Sorrento Valley Rd/Mira Mesa Blvd to Scranton Rd	4 Lane Major Arterial	40,000	12,130	0.303	A
Scranton Rd to Nancy Ridge Dr (W)	4 Lane Collector (w/ TWLTL)	30,000	13,164	0.439	B
Nancy Ridge Dr (W) to Pacific Heights Blvd	2 Lane Major Arterial	20,000	13,164	0.658	C
Pacific Heights Blvd to Black Mountain Rd	Future Connection				
Black Mountain Rd to Maya Linda Rd	4 Lane Collector (w/ TWLTL)	30,000	18,896	0.630	C
Maya Linda Rd to I-15 Ramps	4 Lane Collector (w/ TWLTL)	30,000	19,862	0.662	C
I-15 Ramps to East of Eastern Community Limit	4 Lane Collector (w/ TWLTL)	30,000	13,806	0.460	B
Carroll Rd					
Pacific Heights Blvd to Nancy Ridge Dr (E)	2 Lane Major Arterial	20,000	11,833	0.592	C
Nancy Ridge Dr (E) to Camino Santa Fe	2 Lane Collector (w/ TWLTL)	15,000	15,941	1.063	**F**
Camino Santa Fe to Miramar Rd	2 Lane Collector (w/ TWLTL)	15,000	9,755	0.650	C
Nancy Ridge Dr					
Carroll Canyon Rd to Carroll Rd	2 Lane Collector (w/o TWLTL)	8,000	3,039	0.380	B
Miramar Rd					
West of Western Community Limit	6 Lane Major Arterial	50,000	62,983	1.260	**F**
Western Community Limit to Camino Santa Fe	6 Lane Major Arterial	50,000	66,374	1.327	**F**
Camino Santa Fe to Production Ave	6 Lane Major Arterial	50,000	58,884	1.178	**F**
Production Ave to Distribution Ave	6 Lane Major Arterial	50,000	54,165	1.083	**F**
Distribution Ave to Carroll Rd	6 Lane Major Arterial	50,000	51,816	1.036	**F**
Carroll Rd to Camino Ruiz	6 Lane Major Arterial	50,000	50,944	1.019	**F**
Camino Ruiz to Black Mountain Rd	6 Lane Major Arterial	50,000	64,376	1.288	**F**
Black Mountain Rd to Kearny Villa Rd	6 Lane Major Arterial	50,000	64,382	1.288	**F**
Kearny Villa Rd to I-15 Ramps	6 Lane Major Arterial	50,000	52,857	1.057	**F**
I-15 Ramps to East of Eastern Community Limit	4 Lane Prime Arterial	64,125[d]	28,064	0.438	B
Flanders Dr					
Mira Mesa Blvd to Camino Santa Fe	4 Lane Collector (w/o TWLTL)	15,000	7,549	0.503	C
Camino Santa Fe to Caminito Alvarez	4 Lane Collector (w/o TWLTL)	15,000	10,385	0.692	D
Caminito Alvarez to Parkdale Ave	2 Lane Collector (w/o TWLTL)	8,000	8,279	1.035	**F**
Parkdale Ave to Camino Ruiz	2 Lane Collector (w/o TWLTL)	8,000	4,129	0.516	C
Camino Ruiz to Westonhill Dr	2 Lane Collector (w/o TWLTL)	8,000	3,745	0.468	C
Westonhill Dr to Greenford Dr	2 Lane Collector (w/o TWLTL)	8,000	4,487	0.561	C
Camino Santa Fe					
Sorrento Valley Blvd/Calle Cristobal to Top Gun St	4 Lane Major Arterial	40,000	10,792	0.270	A

Roadway Segment	Functional Class	LOS E Capacity	ADT	V/C Ratio	LOS
Top Gun St to Mira Mesa Blvd	4 Lane Major Arterial	40,000	16,903	0.423	B
Mira Mesa Blvd to Flanders Dr	6 Lane Major Arterial	50,000	18,925	0.379	A
Flanders Dr to Carroll Canyon Rd	6 Lane Prime Arterial	60,000	20,126	0.335	A
Carroll Canyon Rd to Carroll Rd	4 Lane Prime Arterial	45,000	20,126	0.447	B
Carroll Rd to Spectrum Ln	4 Lane Major Arterial	40,000	21,494	0.537	C
Spectrum Ln to Miramar Rd	6 Lane Major Arterial	50,000	21,494	0.430	B
Parkdale Ave					
Mira Mesa Blvd to Flanders Dr	2 Lane Collector (w/o TWLTL)	8,000	4,862	0.608	C
Flanders Dr to Osgood Wy	2 Lane Collector (w/o TWLTL)	8,000	536	0.067	A
Production Ave					
Carroll Rd to Miramar Rd	2 Lane Collector (w/ TWLTL)	15,000	2,353	0.157	A
Distribution Ave					
Carroll Rd to Miramar Rd	2 Lane Collector (w/o TWLTL)	8,000	2,931	0.366	B
Montongo St					
Acama St to Westmore Rd	2 Lane Collector (w/o TWLTL)	8,000	4,555	0.569	C
Westmore Rd to Mira Mesa Blvd	2 Lane Collector (w/o TWLTL)	8,000	3,992	0.499	C
Camino Ruiz					
Calle Cristobal to Aquarius Dr	4 Lane Major Arterial	40,000	18,446	0.461	B
Aquarius Dr to Teresa Dr/Capricorn Wy	4 Lane Collector (w/ TWLTL)	30,000	17,787	0.593	C
Teresa Dr/Capricorn Wy to Westmore Rd	4 Lane Major Arterial	40,000	17,509	0.438	B
Westmore Rd to Mira Mesa Blvd	4 Lane Major Arterial	40,000	19,562	0.489	B
Mira Mesa Blvd to Reagan/Marauder Wy	4 Lane Major Arterial	40,000	22,819	0.570	C
Reagan Rd/Marauder Wy to Flanders Dr	4 Lane Major Arterial	40,000	20,311	0.508	B
Flanders Dr to Gold Coast Dr	4 Lane Major Arterial	40,000	19,060	0.477	B
Gold Coast Dr to Carroll Canyon Rd	4 Lane Major Arterial	40,000	27,094	0.677	C
Carroll Canyon Rd to Activity Rd	4 Lane Major Arterial	40,000	28,213	0.705	C
Activity Rd to Miramar Rd	5 Lane Major Arterial	45,000	27,016	0.600	C
Westmore Rd					
Montongo St to Camino Ruiz	2 Lane Collector (w/o TWLTL)	8,000	5,152	0.644	D
Camino Ruiz to Westonhill Dr	2 Lane Collector (w/o TWLTL)	8,000	9,951	1.244	**F**
Reagan Rd					
Mira Mesa Blvd to Camino Ruiz	2 Lane Collector (w/o TWLTL)	8,000	6,849	0.856	**E**
Marauder Wy					
Camino Ruiz to Mira Mesa Blvd	2 Lane Collector (w/o TWLTL)	8,000	6,086	0.761	D
Gold Coast Dr					
Parkdale Ave to Camino Ruiz	2 Lane Collector (w/o TWLTL)	8,000	7,243	0.905	**E**
Camino Ruiz to Westonhill Dr	2 Lane Collector (w/o TWLTL)	8,000	7,066	0.883	**E**
Westonhill Dr to Black Mountain Rd	2 Lane Collector (w/o TWLTL)	8,000	10,120	1.265	**F**
Black Mountain Rd to Maya Linda Rd	2 Lane Collector (w/o TWLTL)	8,000	7,710	0.964	**E**
Westonhill Dr					
Menkar Rd to Aquarius Dr	2 Lane Collector (w/o TWLTL)	8,000	1,492	0.187	A
Aquarius Dr to Capricorn Wy	2 Lane Collector (w/o TWLTL)	8,000	4,297	0.537	C
Capricorn Wy to Libra Dr	2 Lane Collector (w/o TWLTL)	8,000	6,636	0.830	**E**
Libra Dr to Westmore Rd	2 Lane Collector (w/o TWLTL)	8,000	9,389	1.174	**F**
Westmore Rd to Mira Mesa Blvd	2 Lane Collector (w/o TWLTL)	11,400[d]	8,896	0.780	D
Mira Mesa Blvd to Flanders Dr	2 Lane Collector (w/o TWLTL)	8,000	4,480	0.560	C

Roadway Segment	Functional Class	LOS E Capacity	ADT	V/C Ratio	LOS
Flanders Dr to Gold Coast Dr	2 Lane Collector (w/o TWLTL)	8,000	4,684	0.586	C
Gold Coast Dr to Jade Coast Dr	2 Lane Collector (w/o TWLTL)	8,000	1,762	0.220	A
Aquarius Dr					
Camino Ruiz to Westonhill Dr	2 Lane Collector (w/o TWLTL)	8,000	5,135	0.642	D
Westonhill Dr to Bootes Dt	2 Lane Collector (w/o TWLTL)	8,000	3,197	0.400	B
Capricorn Wy					
Camino Ruiz to Westonhill Dr	2 Lane Collector (w/o TWLTL)	8,000	7,886	0.986	**E**
Westonhill Dr to Bootes St	2 Lane Collector (w/o TWLTL)	8,000	7,167	0.896	**E**
Bootes St to Black Mountain Rd	2 Lane Collector (w/o TWLTL)	8,000	12,481	1.560	**F**
Black Mountain Rd to Westview Pkwy	2 Lane Collector (w/ TWLTL)	15,000	6,438	0.429	B
Bootes St					
Aquarius Dr to Capricorn Wy	2 Lane Collector (w/o TWLTL)	8,000	6,244	0.781	D
Libra Dr					
Westonhill Dr to Hyades Wy	2 Lane Collector (w/o TWLTL)	8,000	4,467	0.558	C
Greenford Dr					
Mira Mesa Blvd to Hillery Dr	2 Lane Collector (w/o TWLTL)	8,000	4,198	0.525	C
Hillery Dr to Flanders Dr	2 Lane Collector (w/o TWLTL)	8,000	5,159	0.645	D
Black Mountain Rd					
North of Northern Community Limit	4 Lane Major Arterial	40,000	36,605	0.915	**E**
Northern Comminuty Limit to Westview Pkwy	6 Lane Prime Arterial	60,000	35,556	0.593	C
Westview Pkwy to Capricorn Wy	6 Lane Prime Arterial	60,000	25,815	0.430	B
Capricorn Wy to Galvin Ave	6 Lane Prime Arterial	60,000	24,454	0.408	A
Galvin Ave to Gemini Ave	4 Lane Major Arterial	40,000	24,797	0.620	C
Gemini Ave to Mira Mesa Blvd	4 Lane Major Arterial	40,000	27,659	0.691	C
Mira Mesa Blvd to Hillery Dr	4 Lane Major Arterial	40,000	18,301	0.458	B
Hillery Dr to Gold Coast Dr	4 Lane Major Arterial	40,000	23,507	0.588	C
Gold Coast Dr to Carroll Canyon Rd	4 Lane Major Arterial	40,000	24,794	0.620	C
Carroll Canyon Rd to Maya Linda Rd	4 Lane Major Arterial	40,000	23,944	0.599	C
Maya Linda Rd to Black Mountain Rd/Carroll Centre Rd	5 Lane Major Arterial	45,000	24,188	0.538	B
Black Mountain Rd/Kearny Villa Rd to Activity Rd	4 Lane Collector (w/ TWLTL)	30,000	16,795	0.560	C
Activity Rd to Miramar Rd	4 Lane Collector (w/ TWLTL)	30,000	11,575	0.386	B
Kearny Villa Rd					
Black Mountain Rd/Carroll Centre Rd to Miramar Rd	4 Lane Collector (w/ TWLTL)	30,000	12,079	0.403	B
Miramar Rd to South of Southern Community Limit	4 Lane Major Arterial	40,000	26,246	0.656	C
Gemini Ave					
Hyades Wy to Black Mountain Rd	3 Lane Collector (w/ TWLTL)	22,500	9,839	0.437	B
Hillery Dr					
Greenford Dr to Black Mountain Rd	2 Lane Collector (w/o TWLTL)	8,000	12,224	1.528	**F**
Black Mountain Rd to Westview Pkwy	4 Lane Collector (w/ TWLTL)	30,000	15,473	0.516	C
Activity Rd					
Camino Ruiz to Black Mountain Rd	2 Lane Collector (w/ TWLTL)	15,000	11,844	0.790	D
Mercy Rd					

Roadway Segment	Functional Class	LOS E Capacity	ADT	V/C Ratio	LOS
Black Mountain Rd to I-15 Ramps	4 Lane Major Arterial	40,000	17,747	0.444	B
I-15 Ramps to East of Eastern Community Limit	6 Lane Prime Arterial	60,000	36,813	0.614	C
Westview Pkwy					
Black Mountain Rd to Capricorn Wy	4 Lane Collector (w/ TWLTL)	30,000	7,819	0.261	A
Capricorn Wy to Galvin Ave	4 Lane Major Arterial	40,000	19,810	0.495	B
Galvin Ave to Mira Mesa Blvd	4 Lane Major Arterial	40,000	22,495	0.562	C
Mira Mesa Blvd to Hillery Dr	4 Lane Major Arterial	40,000	12,544	0.314	A
Galvin Ave					
Black Mountain Rd to Westview Pkwy	4 Lane Major Arterial	40,000	4,548	0.114	A
Maya Linda Rd					
Carroll Canyon Rd to Black Mountain Rd	2 Lane Collector (w/o TWLTL)	8,000	1,970	0.246	A

Notes:
Bold values indicate roadway segments operating at LOS E or F.
(a) Existing road classifications are based on field work conducted December 2017.
(b) Average Daily Traffic (ADT) volumes for the roadway segments were provided by NDS and Field Data Services of Arizona/Veracity Traffic Group and measured in October and November 2018.
(c) The v/c Ratio is calculated by dividing the ADT volume by each respective roadway segment's capacity.
(d) Capacity accounts for auxiliary lanes for this segment.

4.4.4 VEHICULAR QUALITY – TRAVEL SPEED SURVEY

Travel speeds were recorded along four major corridors in the Mira Mesa community during periods of high demand to estimate real-world vehicular travel speeds when traffic is likely to be heaviest, as well as to identify locations of delay along key roadway facilities. The roadways analyzed were Mira Mesa Boulevard, Miramar Road, Camino Santa Fe, and Black Mountain Road. Travel speed data was collected between January 23rd and January 29th, 2019 on Tuesday, Wednesday, and Thursday between 7:00-9:00 AM and 4:00-6:00 PM. The data was collected using the floating car method via the Traction application developed by Kimley-Horn. A detailed summary of travel speed data is included in **Appendix G**.

Crowd-source data was also obtained from the Traction software for a one-month period along the four travel time corridors, as well as an additional seven corridors in the study area: Camino Ruiz, Carroll Canyon Road, Lusk Boulevard, Pacific Heights Boulevard, Sorrento Valley Boulevard / Calle Cristobal, Vista Sorrento Parkway, and Westview Parkway. Data was collected at 10-minute intervals between 5:00 AM and 9:00 PM. This data provides information to show fluctuations in travel times at different times of days and on different days of the week. It was compared to the field travel time data for the four study corridors for validation of data.

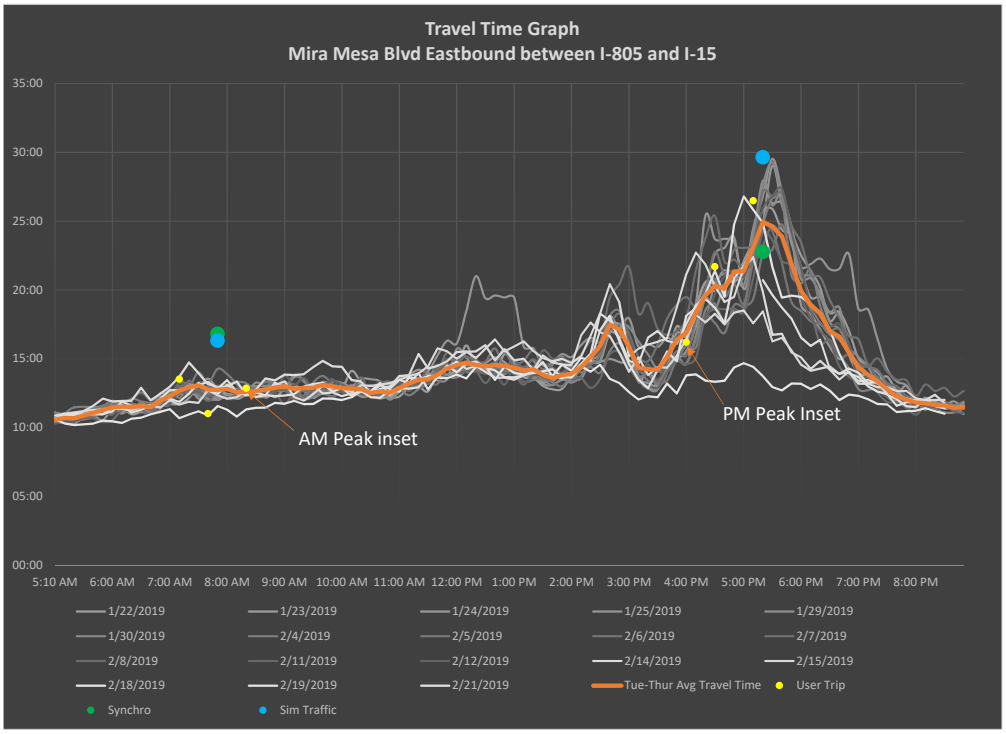
Figure 4-38 through **Figure 4-45** show the travel time data results comparing crowd-sourced data, travel time data, Synchro arterial outputs, and SimTraffic arterial outputs for each of the four travel time corridors in each direction. The figures also show the congestion areas for each direction of travel during the peak periods, to highlight areas where significant delays and/or queueing was experienced during the field runs.

Mira Mesa Boulevard and Miramar Road are congested westbound in the morning between 7 – 10 AM and eastbound in the afternoon between 2:30 – 7:30 PM.

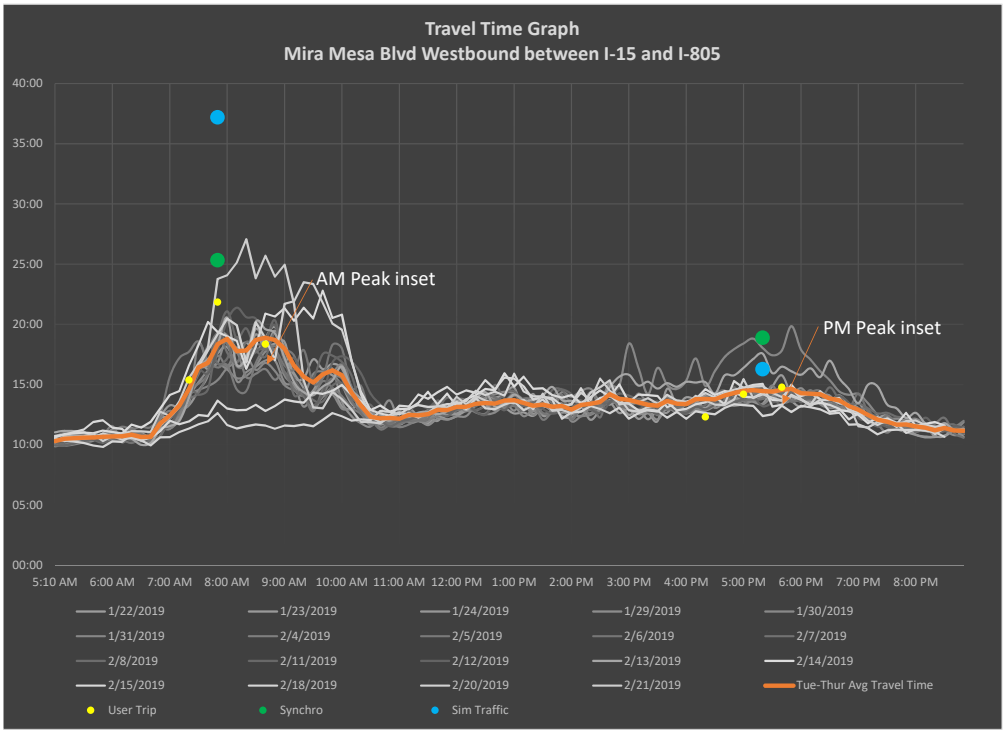
Camino Santa Fe has fairly consistent travel times throughout the day with increased northbound and southbound times from 4 – 6 PM.

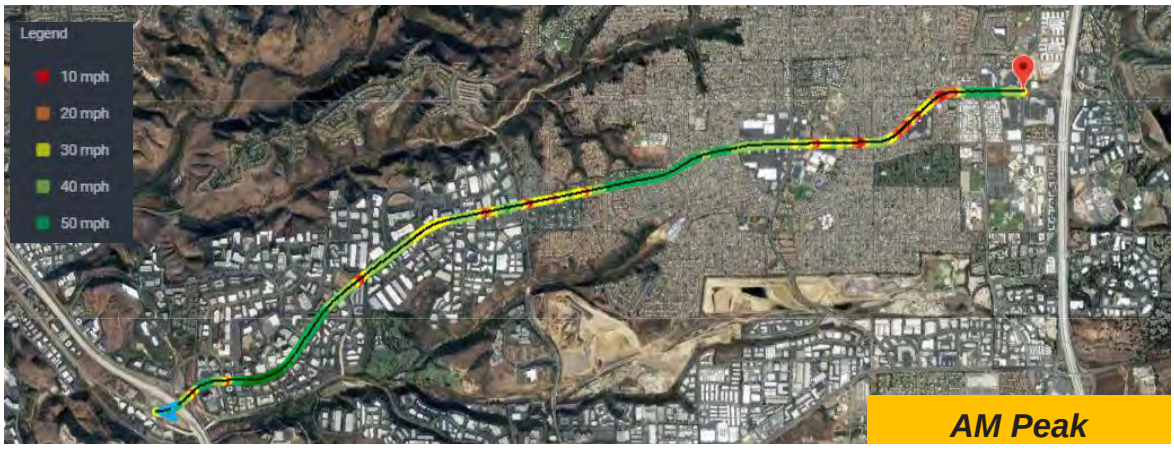
Black Mountain Road has significant congestion in the southbound direction from 7 – 10 AM and moderate congestion northbound and southbound from 4 – 7 PM.

Figure 4-46 and **Figure 4-47** summarize the most congested segments and intersections for the vehicular study area during the AM and PM peak periods. Roadway segment congestion is based on SimTraffic speed data, highlighting segments where vehicles currently travel at 20 MPH or less during the peak periods. Intersection congestion is depicted by intersections currently operating at LOS E or LOS F based on the intersection analysis discussed in **Section 4.4.5**.

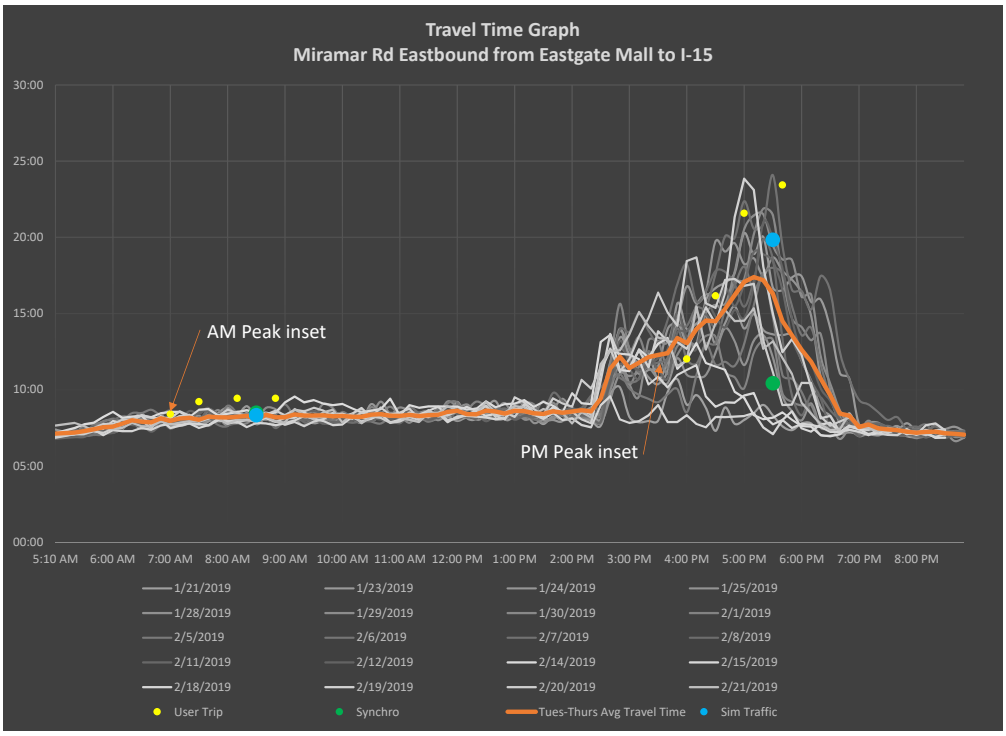


Mira Mesa Blvd Travel Time - Eastbound Direction

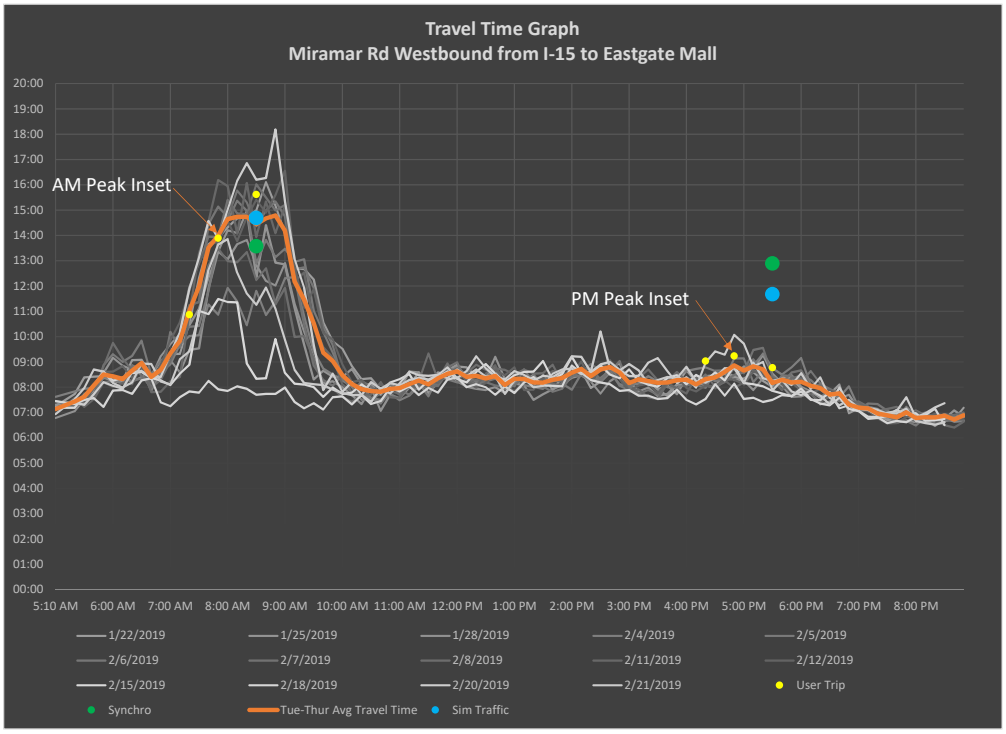




Mira Mesa Blvd Travel Time - Westbound Direction

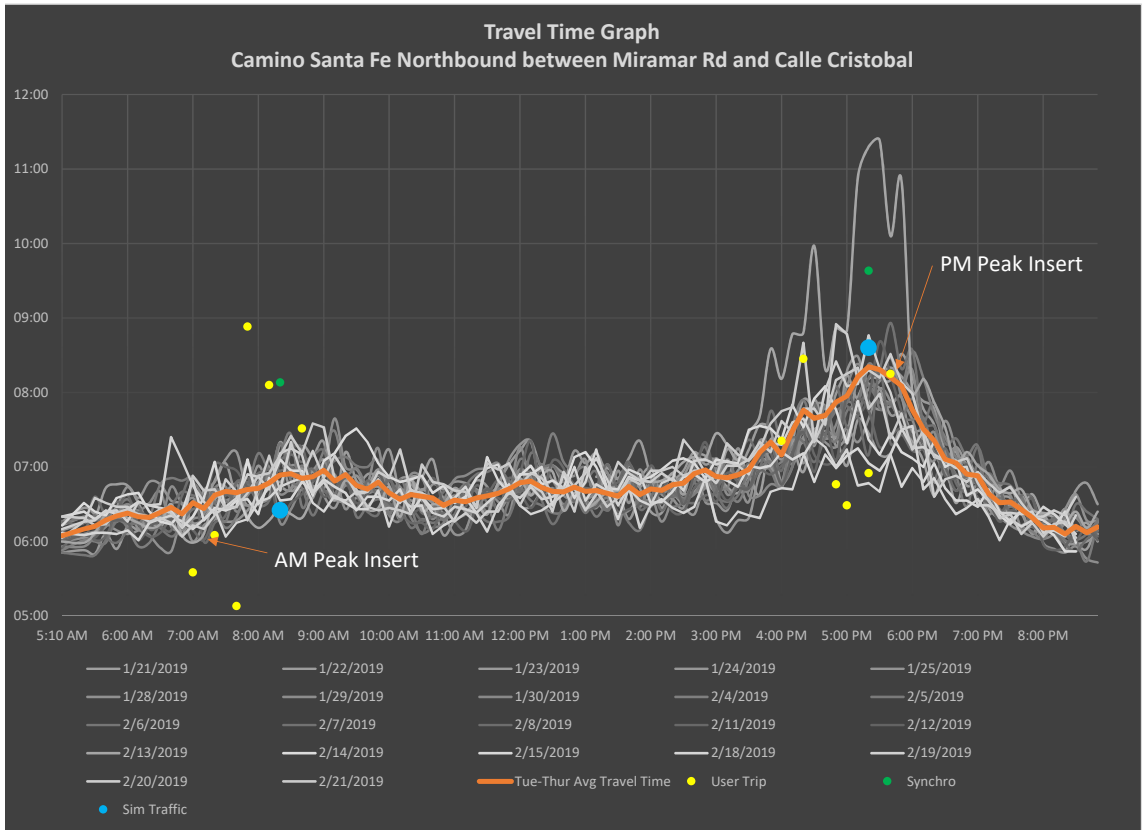


Miramar Rd Travel Time - Eastbound Direction



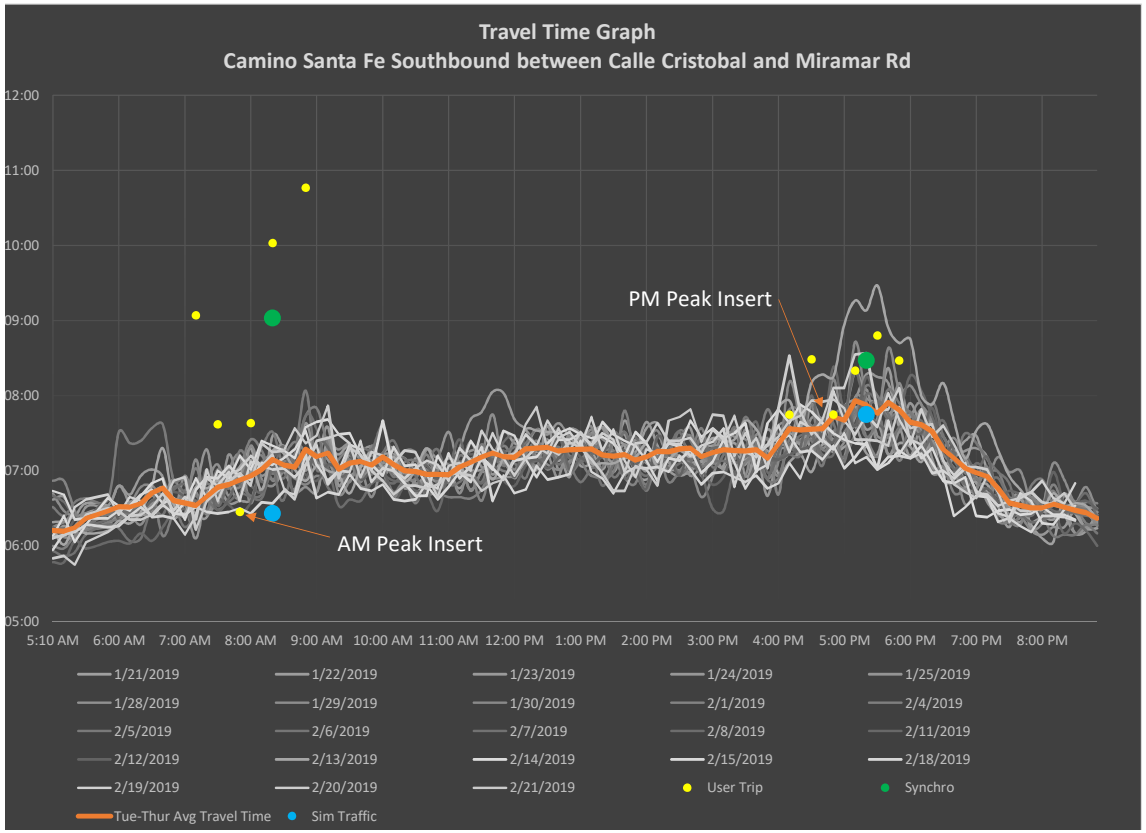
Miramar Rd Travel Time - Westbound Direction

FIGURE 4-42



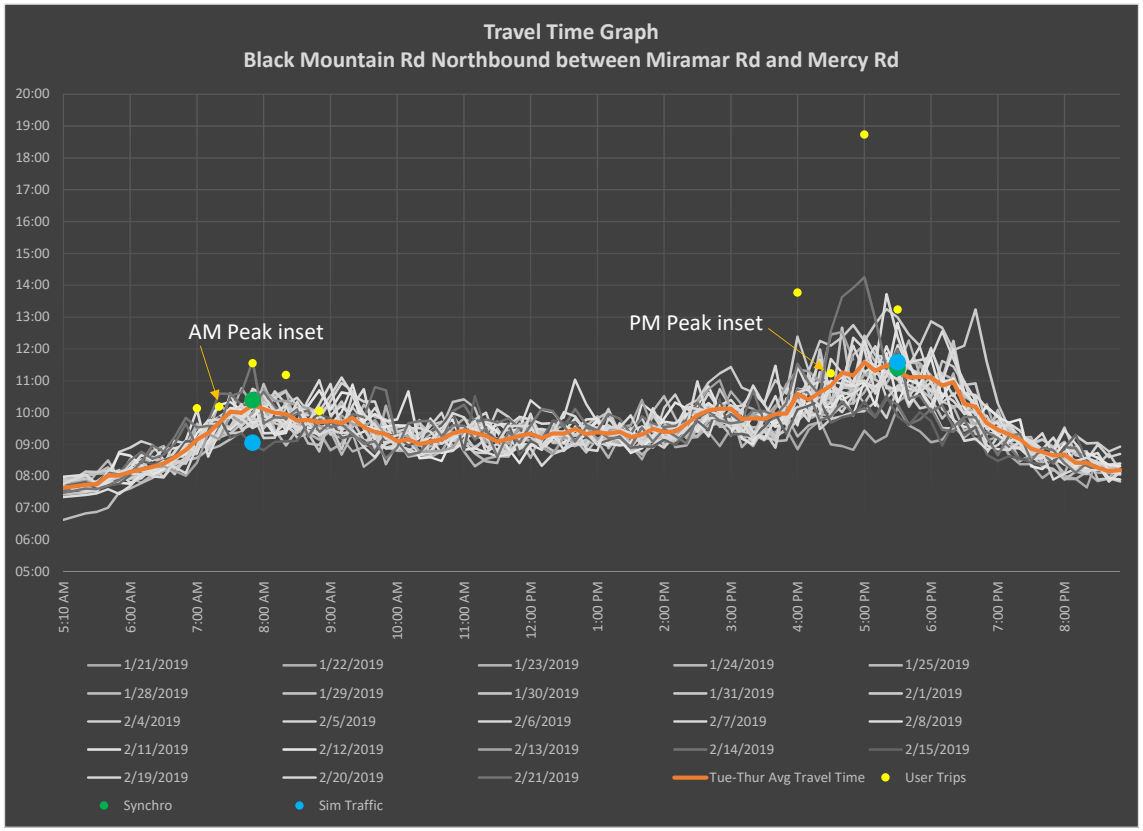
Camino Santa Fe Travel Time - Northbound Direction

FIGURE 4-43



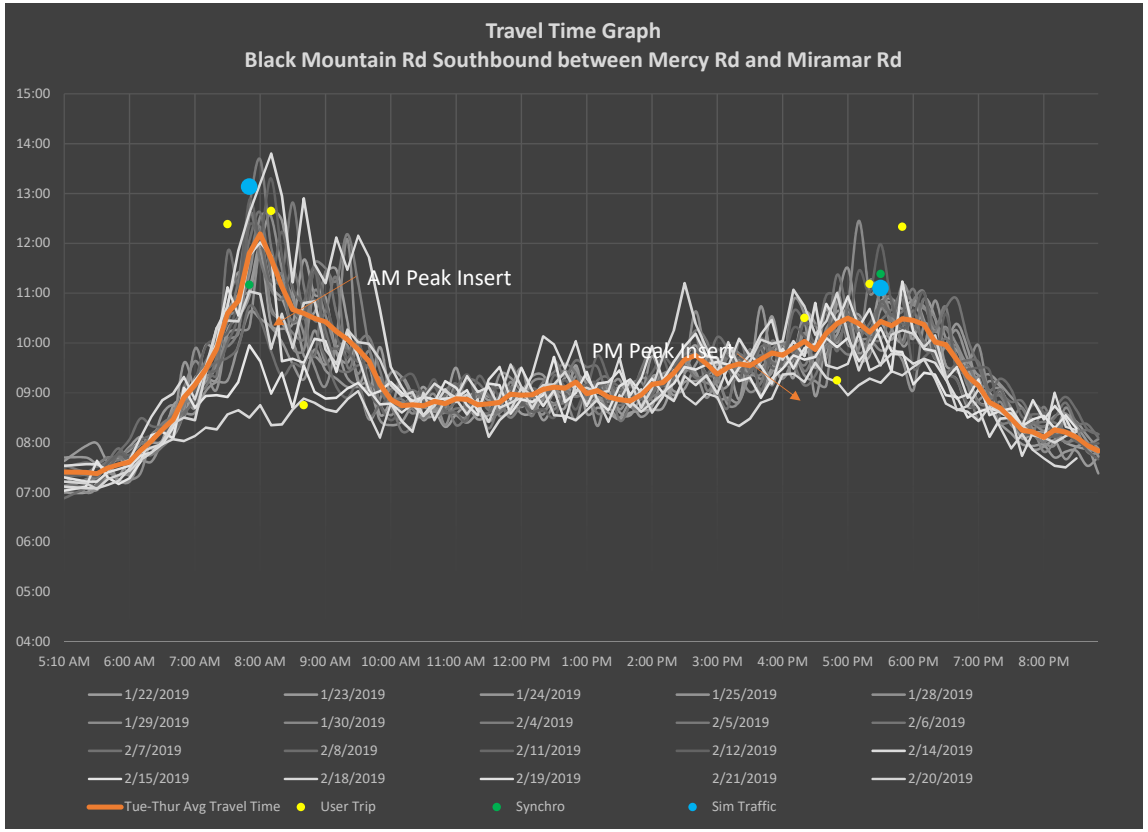
Camino Santa Fe Travel Time - Southbound Direction

FIGURE 4-44

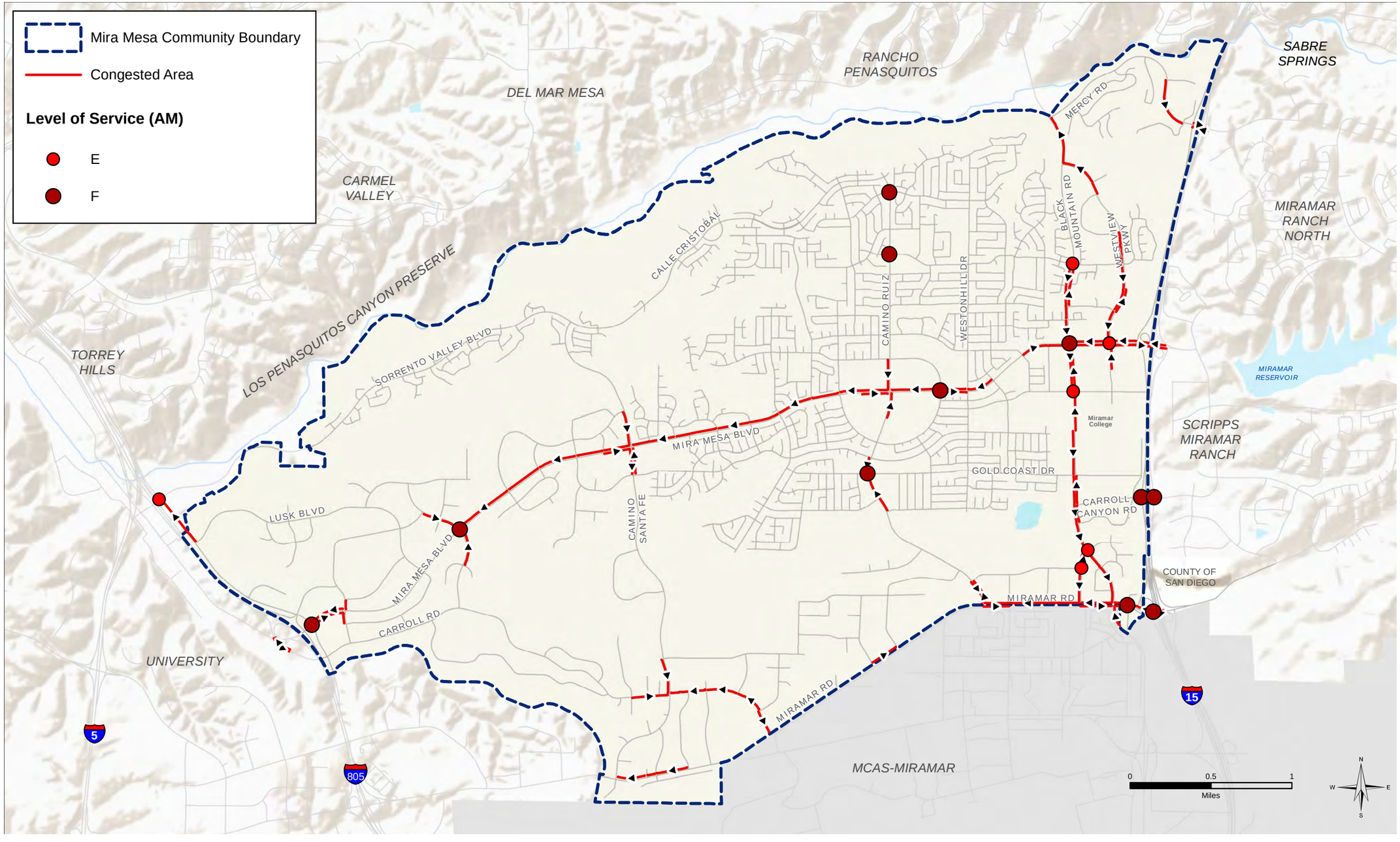


Black Mountain Road Travel Time - Northbound Direction

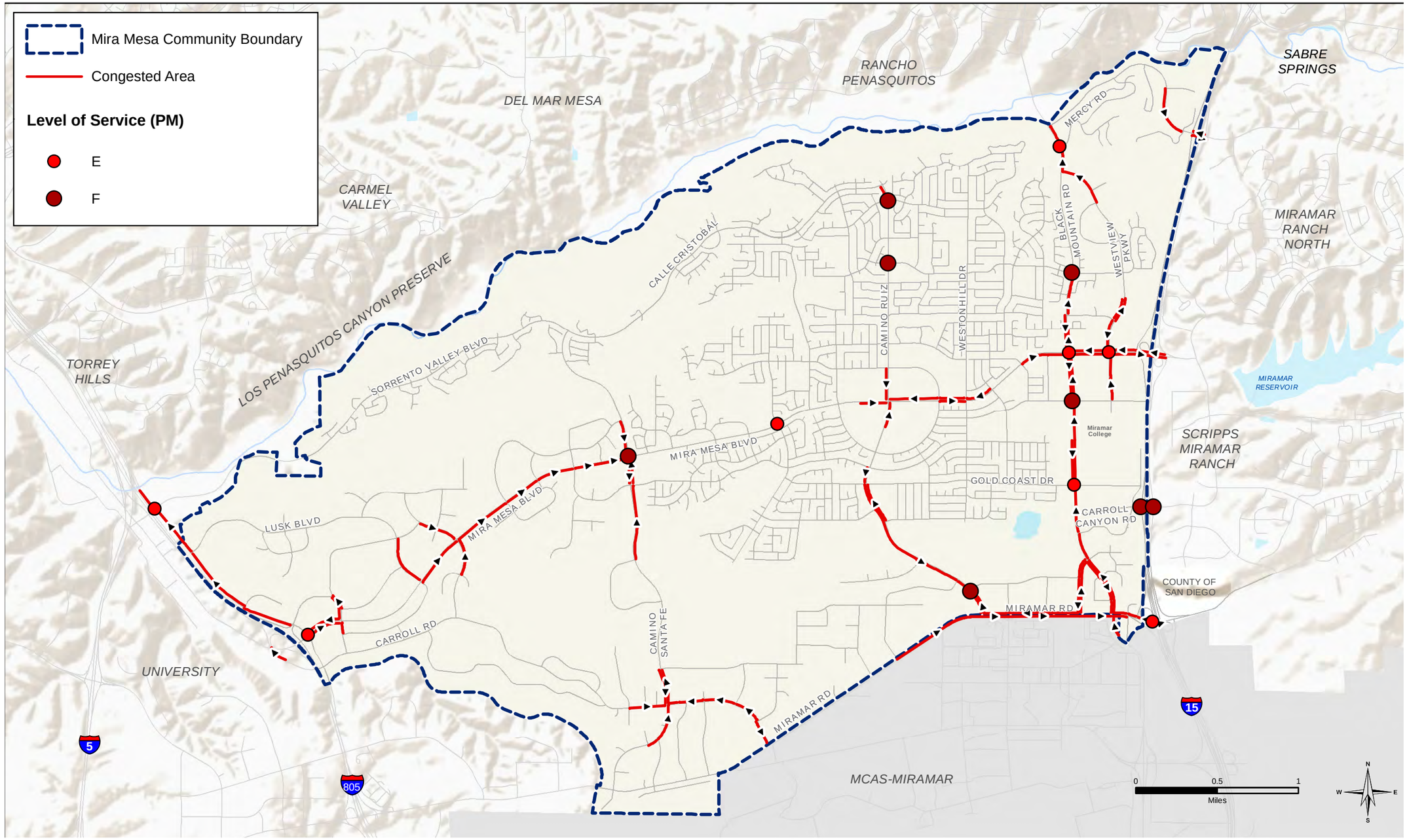
FIGURE 4-45



Black Mountain Road Travel Time - Southbound Direction



Vehicle Congestion Areas - AM Peak



Vehicle Congestion Areas - PM Peak

4.4.5 VEHICULAR QUALITY – INTERSECTION ANALYSIS

Peak-hour LOS analyses were performed for the AM and PM peak hour at each of the intersections within the study area as described in **Section 2.4**. The analyses represent the one-hour timeframe that experiences the highest total intersection volume at each individual location.

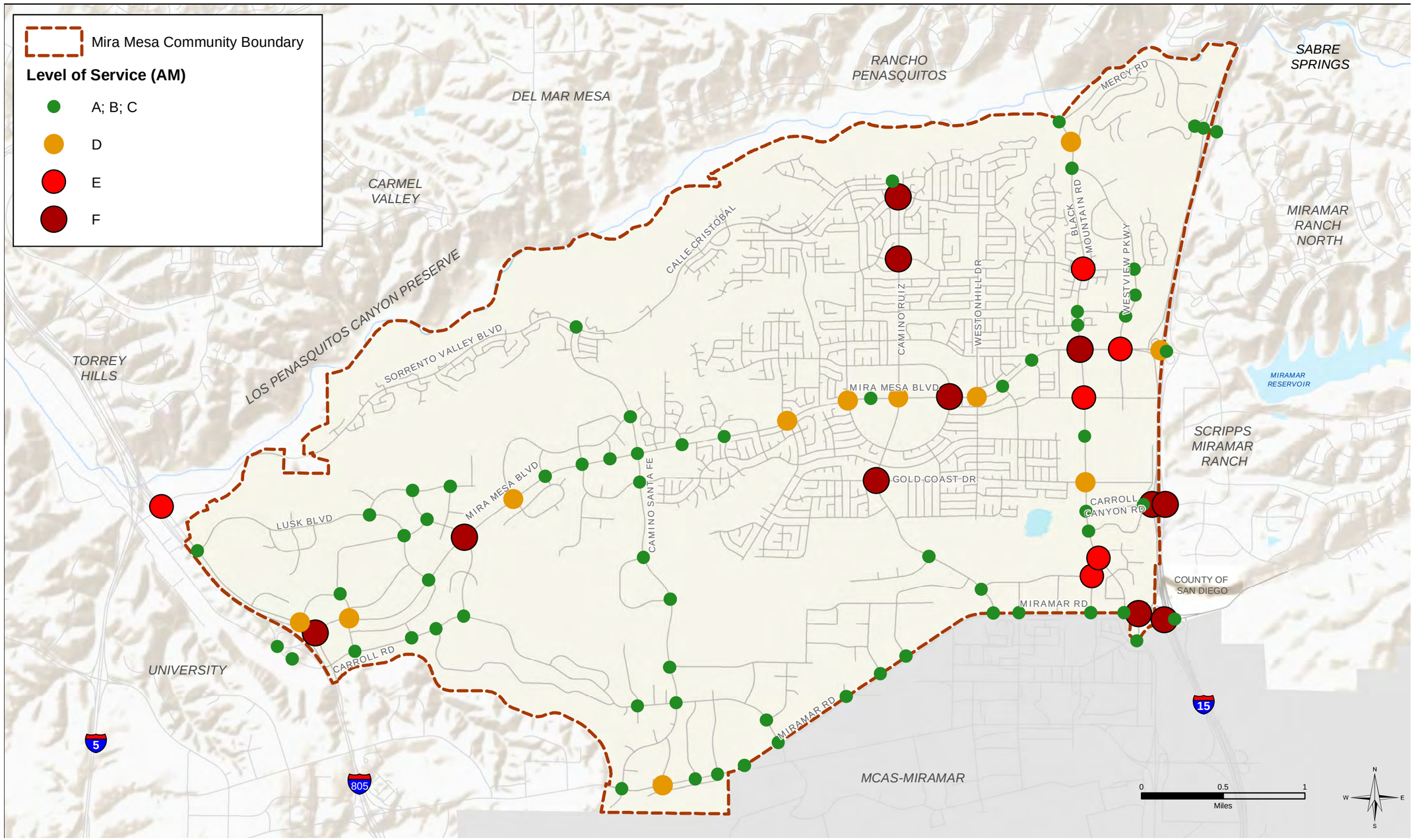
The following locations have coordinated signal timing plans for the listed time of day:

- Mira Mesa Boulevard – Mira Mesa Mall Driveway to Westview Parkway, I-15 NB Ramps (AM, PM)
- Miramar Road – Camino Santa Fe to I-15 SB Ramps, Kearny Mesa (AM, PM)
- Mercy Road – I-15 SB Ramps, I-15 NB Ramps (AM)
- Carroll Canyon Rd – I-15 SB Ramps, I-15 NB Ramps (AM, PM)
- Camino Ruiz – Gold Coast Drive, Activity Road (AM, PM)
- Black Mountain Road – Capricorn Way to Miramar College Driveway (AM, PM)
- Black Mountain Road – Gold Coast Drive, Mercy Boulevard (PM)
- Black Mountain Road – Carroll Canyon Road, Maya Linda Rd (AM, PM)

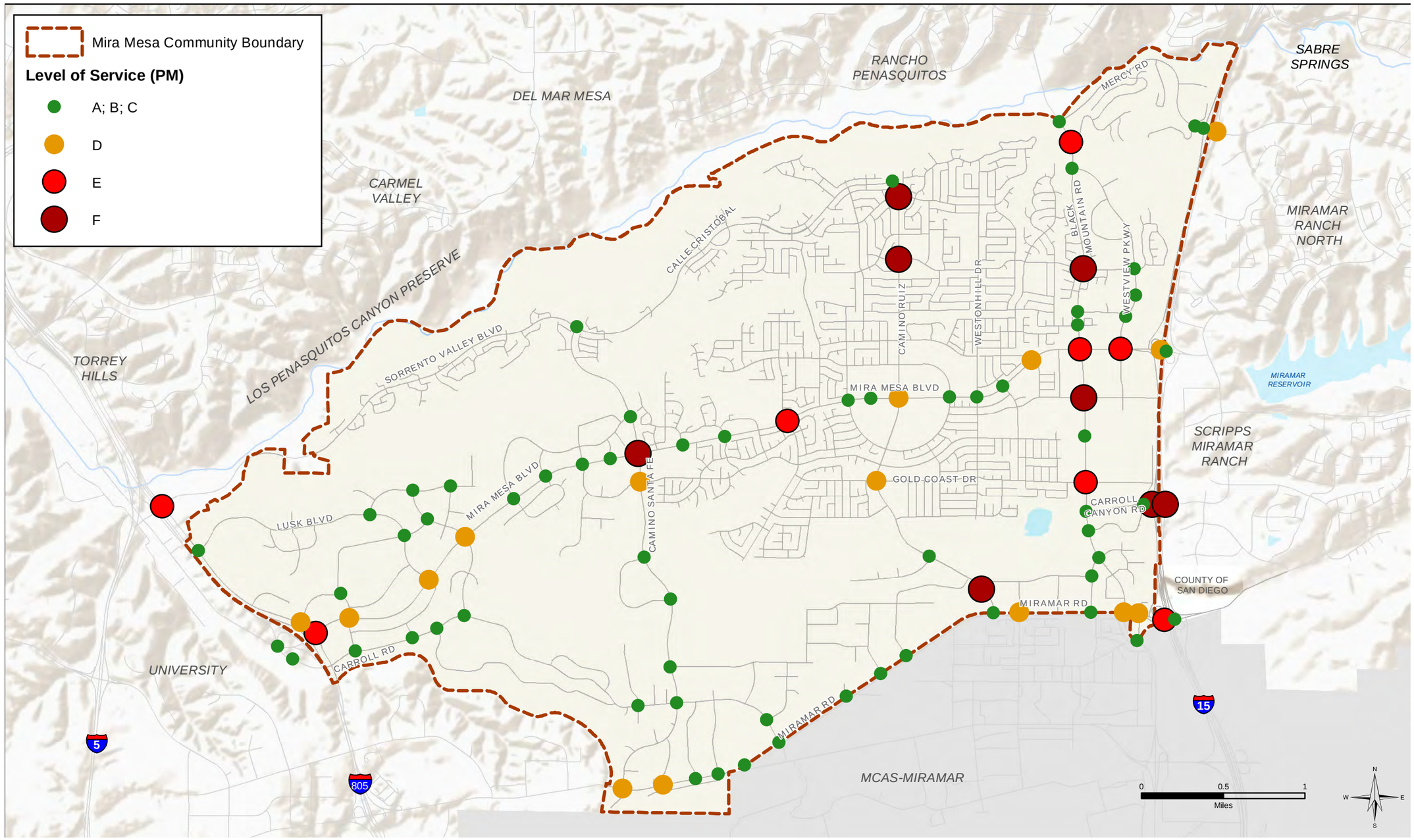
The intersection analysis results are presented in **Figure 4-48** and **Figure 4-49** for all 92 study intersections, during the AM and PM peak hours. **Table 4-31** identifies the traffic control type for each intersection, and the corresponding AM and PM peak hour delay and LOS. Detailed intersection LOS calculation worksheets are provided in **Appendix F**.

As shown in the results:

- Twenty-two of the ninety-two intersections evaluated experienced LOS E or F conditions during one or more of the peak periods
    - 7 of the 22 intersections are located along Mira Mesa Boulevard, with failing operations during both the AM and PM peak hours.
    - 7 of the 22 intersections are located along Black Mountain Road, with failing operations during both the AM and PM peak hours.
    - 4 of the 22 intersections are located along Camino Ruiz, with failing operations during both the AM and PM peak hours.
    - 2 of the 22 intersections are located along Miramar Road, with failing operations during both the AM and PM peak hours.
    - 2 of the 22 intersections is located along Vista Sorrento Parkway, with failing operations during both the AM and PM peak hours.
    - The I-15 on and off ramp intersections at Carroll Canyon Road operate with failing operations during both the AM and PM peak hours



Existing Intersection Level of Service (AM Peak)



Existing Intersection Level of Service (PM Peak)

Table 4-31 Intersection Peak Hour Delay and LOS Analysis

ID	Intersection	Control	Peak Hour	Existing	
				Delay (a)	LOS (b)
1	Vista Sorrento Pkwy & Sorrento Valley Blvd	Signal	AM	**58.5**	**E**
			PM	**64.3**	**E**
2	Camino Santa Fe & Sorrento Valley Blvd	Signal	AM	12.1	B
			PM	23.4	C
3	Camino Ruiz & Calle Cristobal	Signal	AM	9.7	A
			PM	13.1	B
4	Alemenia Rd & Mercy Rd	Signal	AM	9.5	A
			PM	8.3	A
5	I-15 SB Ramps & Mercy Rd	Signal	AM	28.8	C
			PM	31.5	C
6	I-15 NB Ramps & Mercy Rd	Signal	AM	27.9	C
			PM	37.1	D
7	Black Mountain Rd & Babauta Rd	SSSC	AM	15.2	C
			PM	**43.6**	**E**
8	Vista Sorrento Pkwy & Mira Sorrento Pl	Signal	AM	40.7	D
			PM	52.6	D
9	Scranton Rd & Mira Mesa Blvd	Signal	AM	35.6	D
			PM	51.9	D
10	Lusk Blvd & Mira Mesa Blvd	Signal	AM	23.6	C
			PM	43.0	D
11	Pacific Heights Blvd & Mira Mesa Blvd	Signal	AM	**102.6**	**F**
			PM	51.8	D
12	Sequence Dr/Huennekens St & Mira Mesa Blvd	Signal	AM	43.7	D
			PM	27.9	C
13	Genetic Center/Steadman St & Mira Mesa Blvd	Signal	AM	29.3	C
			PM	14.2	B
14	Flanders Dr & Mira Mesa Blvd	Signal	AM	27.4	C
			PM	17.1	B
15	Viper Wy & Mira Mesa Blvd	Signal	AM	10.2	B
			PM	13.7	B
16	Camino Santa Fe & Mira Mesa Blvd	Signal	AM	22.1	C
			PM	**102.8**	**F**
17	Schilling Ave & Mira Mesa Blvd	Signal	AM	10.1	B
			PM	7.8	A
18	Aderman Ave & Mira Mesa Blvd	Signal	AM	6.5	A
			PM	6.3	A
19	Parkdale Ave & Mira Mesa Blvd	Signal	AM	40.8	D
			PM	**57.7**	**E**
20	Reagan Rd & Mira Mesa Blvd	Signal	AM	52.8	D
			PM	34.5	C

ID	Intersection	Control	Peak Hour	Existing	
				Delay (a)	LOS (b)
21	Mira Mesa Mall Driveways & Mira Mesa Blvd	Signal	AM	4.2	A
			PM	18.7	B
22	Camino Ruiz & Mira Mesa Blvd	Signal	AM	49.0	D
			PM	45.2	D
23	New Salem St/Marauder Wy & Mira Mesa Blvd	Signal	AM	**111.6**	**F**
			PM	18.5	B
24	Westonhill Dr & Mira Mesa Blvd	Signal	AM	37.1	D
			PM	17.0	B
25	Greenford Dr & Mira Mesa Blvd	Signal	AM	8.5	A
			PM	14.1	B
26	Westmore Rd/Marbury Ave & Mira Mesa Blvd	Signal	AM	21.3	C
			PM	38.3	D
27	Black Mountain Rd & Mira Mesa Blvd	Signal	AM	**122.4**	**F**
			PM	**71.3**	**E**
28	Westview Pkwy & Mira Mesa Blvd	Signal	AM	**76.7**	**E**
			PM	**65.9**	**E**
29	I-15 SB Ramps & Mira Mesa Blvd	Signal	AM	46.8	D
			PM	46.6	D
30	I-15 NB Ramps & Mira Mesa Blvd	Signal	AM	26.2	C
			PM	22.0	C
31	Black Mountain Rd & Mercy Rd	Signal	AM	18.7	B
			PM	34.9	C
32	Camino Santa Fe & Miramar Rd	Signal	AM	30.8	C
			PM	48.1	D
33	Commerce Ave & Miramar Rd	Signal	AM	45.6	D
			PM	47.9	D
34	Production Ave & Miramar Rd	Signal	AM	4.5	A
			PM	5.0	A
35	Distribution Ave & Miramar Rd	Signal	AM	5.3	A
			PM	20.2	C
36	Miramar Wy & Miramar Rd	Signal	AM	2.5	A
			PM	5.3	A
37	Carroll Canyon Rd & Miramar Rd	Signal	AM	8.4	A
			PM	22.8	C
38	Alesmith Ct / Empire St & Miramar Rd	Signal	AM	1.1	A
			PM	1.9	A
39	Dowdy Dr & Miramar Rd	Signal	AM	6.3	A
			PM	28.0	C
40	Cabot Dr & Miramar Rd	Signal	AM	13.6	B
			PM	11.4	B
41	Camino Ruiz & Miramar Rd	Signal	AM	18.3	B
			PM	22.5	C
42	Clayton Dr/Mitscher Wy & Miramar Rd	Signal	AM	14.2	B
			PM	40.9	D
43	Black Mountain Rd & Miramar Rd	Signal	AM	7.1	A

ID	Intersection	Control	Peak Hour	Existing	
				Delay (a)	LOS (b)
			PM	12.6	B
44	Kearny Villa Rd & Miramar Rd	Signal	AM	32.5	C
			PM	35.5	D
45	I-15 SB Ramps & Miramar Rd	Signal	AM	**549.9**	**F**
			PM	**68.4**	**E**
46	I-15 NB Ramps & Miramar Rd	Signal	AM	13.5	B
			PM	13.4	B
47	Camino Santa Fe & Carroll Rd	Signal	AM	32.1	C
			PM	33.7	C
48	Camino Santa Fe & Flanders Dr	Signal	AM	28.3	C
			PM	52.9	D
49	Camino Ruiz & Carroll Canyon Rd	Signal	AM	9.9	A
			PM	7.0	A
50	Camino Ruiz & Activity Rd	Signal	AM	23.5	C
			PM	**80.8**	**F**
51	I-805 SB Off-Ramp/Carroll Canyon Rd & Sorrento Valley Rd	Signal	AM	20.8	C
			PM	18.0	B
52	Vista Sorrento Pkwy & Mira Mesa Blvd	Signal	AM	**191.3**	**F**
			PM	**69.1**	**E**
53	Vista Sorrento Pkwy & Lusk Blvd	Signal	AM	13.8	B
			PM	17.3	B
54	Pacific Center Blvd & Lusk Blvd	Signal	AM	11.4	B
			PM	12.6	B
55	Scranton Rd & Carroll Canyon Rd	Signal	AM	7.9	A
			PM	11.4	B
56	Pacific Heights Blvd & Carroll Canyon Rd	Signal	AM	10.7	B
			PM	13.2	B
57	Lusk Blvd & Barnes Canyon Rd	Signal	AM	16.7	B
			PM	15.3	B
58	Pacific Heights Blvd & Pacific Center Blvd	Signal	AM	14.4	B
			PM	16.9	B
59	Pacific Mesa Blvd & Pacific Center Blvd	Signal	AM	15.9	B
			PM	20.5	C
60	Business Access Rd & Carroll Canyon Rd	Signal	AM	3.8	A
			PM	5.7	A
61	Scranton Rd & Mira Sorrento Pl	Signal	AM	12.7	B
			PM	22.6	C
62	Youngstown Wy & Carroll Canyon Rd	Signal	AM	4.5	A
			PM	9.7	A
63	Black Mountain Rd & Westview Pkwy	Signal	AM	13.6	B
			PM	20.2	C
64	Black Mountain Rd & Capricorn Wy	Signal	AM	**57.6**	**E**
			PM	**141.1**	**F**
65	Black Mountain Rd & Galvin Ave	Signal	AM	12.0	B
			PM	6.0	A

ID	Intersection	Control	Peak Hour	Existing	
				Delay (a)	LOS (b)
66	Black Mountain Rd & Gemini Ave	Signal	AM	12.9	B
			PM	32.8	C
67	Black Mountain Rd & Hillery Dr	Signal	AM	**79.9**	**E**
			PM	**82.9**	**F**
68	Black Mountain Rd & Miramar College	Signal	AM	10.8	B
			PM	29.0	C
69	Black Mountain Rd & Gold Coast Dr	Signal	AM	42.7	D
			PM	**59.7**	**E**
70	Black Mountain Rd & Carroll Canyon Rd	Signal	AM	25.6	C
			PM	12.3	B
71	Maya Linda Rd & Carroll Canyon Rd	Signal	AM	20.6	C
			PM	12.2	B
72	Black Mountain Rd & Maya Linda Rd	Signal	AM	6.9	A
			PM	5.1	A
73	Black Mountain Rd/Kearny Villa Rd & Black Mountain Rd/Carroll Centre Rd	Signal	AM	**69.2**	**E**
			PM	25.6	C
74	Kearny Mesa Rd & Kearny Villa Rd	SSSC	AM	16.1	C
			PM	12.2	B
75	Black Mountain Rd & Activity Rd	Signal	AM	**61.5**	**E**
			PM	33.9	C
76	Westview Pkwy & Mira Lee Wy	Signal	AM	34.3	C
			PM	20.6	C
77	Westview Pkwy & Galvin Ave	Signal	AM	21.8	C
			PM	12.7	B
78	I-15 NB Ramps & Carroll Canyon Rd	Signal	AM	**295.8**	**F**
			PM	**171.7**	**F**
79	I-15 SB Ramps & Carroll Canyon Rd	Signal	AM	**668.2**	**F**
			PM	**432.4**	**F**
80	Kearny Mesa Rd & Miramar Rd	Signal	AM	**129.9**	**F**
			PM	36.9	D
81	Camino Santa Fe & Top Gun St	Signal	AM	12.9	B
			PM	14.1	B
82	Camino Santa Fe & Miratech Dr	Signal	AM	6.0	A
			PM	8.5	A
83	Camino Santa Fe & Summers Ridge Rd	Signal	AM	6.8	A
			PM	6.2	A
84	Camino Santa Fe & Trade St	Signal	AM	14.3	B
			PM	18.2	B
85	Nancy Ridge Dr & Carroll Canyon Rd	Signal	AM	8.2	A
			PM	8.8	A
86	Rehco Rd & Carroll Rd	Signal	AM	5.1	A
			PM	11.5	B
87	Carroll Rd & Kenamar Dr	Signal	AM	10.3	B
			PM	11.8	B
88	Camino Ruiz & Teresa Dr/Capricorn Wy	Signal	AM	**217.8**	**F**

ID	Intersection	Control	Peak Hour	Existing	
				Delay (a)	LOS (b)
			PM	**148.6**	**F**
89	Camino Ruiz & Gold Coast Dr	Signal	AM	**111.3**	**F**
			PM	36.8	D
90	Westview Pkwy & Capricorn Wy	Signal	AM	13.8	B
			PM	10.7	B
91	Camino Ruiz & Aquarius Dr	AWSC	AM	**195.0**	**F**
			PM	**159.6**	**F**
92	Pacific Heights Blvd & Barnes Canyon Rd	Signal	AM	14.2	B
			PM	14.9	B

Notes:

Bold values indicate intersections operating at LOS E or F.

(a) Delay refers to the average control delay for the entire intersection, measured in seconds per vehicle. At a two-way stop-controlled intersection, delay refers to the worst movement.

(b) LOS calculations are based on the methodology outlined in the *6th Edition Highway Capacity Manual* and performed using Synchro 10.

4.4.6 VEHICULAR QUALITY – INTERSECTION QUEUING ANALYSIS

Queuing analysis was performed to understand where queue volumes may cause overflows into adjacent lanes. This can reduce the efficiency of the intersection control and can have a detrimental effect on vehicular flow through intersections both upstream and downstream of the affected intersection. Overflows were determined to occur where the 95th percentile of queue lengths in either the AM or PM peak periods exceeds the storage length for that movement. **Table 4-32** identifies the intersection control, pocket length, 95th percentile queue lengths, and any excess queueing for each movement that exceeds the storage length. The results of this analysis show that nearly two-thirds of the 92 study intersections have insufficient storage lengths for at least one turning movement.

Table 4-32 Intersection Storage Lengths and Queue Analysis

Intersection	Movement	Pocket Length	95% Queue Length (AM)	95% Queue Length (PM)	Excess Queue (AM) (ft)	Excess Queue (PM) (ft)
1. Vista Sorrento Pkwy & Sorrento Valley Blvd	EBL	315	135	249	-	-
	WBL	275	539	83	264	-
	NBL	275	221	816	-	541
	SBL	150	404	461	254	311
	SBR	125	138	56	13	-
2. Camino Santa Fe & Sorrento Valley Blvd	EBL	250	0	6	-	-
	EBR	250	54	89	-	-
	WBL	270	191	55	-	-
	NBL	365	84	234	-	-
3. Camino Ruiz & Calle Cristobal	EBT/L	340	17	15	-	-
	NBL	240	531	140	291	-
	NBR	145	0	0	-	-
	SBL	80	0	0	-	-
4. Alemenia Rd & Mercy Rd	EBL	170	71	56	-	-
	WBL	100	19	23	-	-
	WBR	150	42	55	-	-
	SBR	35	2	12	-	-
5. I-15 SB Ramps & Mercy Rd	EBR	120	384	105	264	-
	SBL	705	256	404	-	-
6. I-15 NB Ramps & Mercy Rd	EBL	150	175	203	25	53
	WBR	165	387	726	222	561
	NBL	330	61	175	-	-
	NBR	330	812	387	482	57
7. Black Mountain Rd & Babauta Rd	SBL	210	5	10	-	-
8. Vista Sorrento Pkwy & Mira Sorrento Pl	EBL	170	824	353	654	183
	EBR	160	20	17	-	-
	WBL	210	46	217	-	7
	SBL	245	177	79	-	-
9. Scranton Rd & Mira Mesa Blvd	EBL	385	491	157	106	-
	WBL	365	142	191	-	-

Intersection	Movement	Pocket Length	95% Queue Length (AM)	95% Queue Length (PM)	Excess Queue (AM) (ft)	Excess Queue (PM) (ft)
	SBL	120	60	93	-	-
10. Lusk Blvd & Mira Mesa Blvd	EBL	245	191	67	-	-
	WBL	255	79	57	-	-
	NBL	105	26	61	-	-
	NBR	105	0	133	-	28
	SBL	210	66	423	-	213
11. Pacific Heights Blvd & Mira Mesa Blvd	EBL	290	742	272	452	-
	WBL	275	369	267	94	-
	WBR	320	982	32	662	-
	NBL	90	90	241	-	151
	NBR	95	0	202	-	107
	SBL	540	93	827	-	287
12. Sequence Dr/Huennekens St & Mira Mesa Blvd	EBL	230	641	408	411	178
	WBL	250	212	69	-	-
	SBL	250	44	146	-	-
	SBR	250	96	338	-	88
13. Genetic Center/Steadman St & Mira Mesa Blvd	EBL	265	237	68	-	-
	WBL	255	481	72	226	-
	NBL	140	38	49	-	-
	NBR	85	0	213	-	128
	SBL	160	82	190	-	30
	SBR	160	7	43	-	-
14. Flanders Dr & Mira Mesa Blvd	EBL	215	142	114	-	-
	WBL	245	139	92	-	-
	NBL	250	353	207	103	-
	NBR	160	0	85	-	-
	SBL	200	45	224	-	24
15. Viper Wy & Mira Mesa Blvd	EBL	260	69	61	-	-
	WBL	260	79	147	-	-
	SBL	110	29	130	-	20
16. Camino Santa Fe & Mira Mesa Blvd	EBL	250	76	121	-	-
	WBL	250	811	317	561	67
	NBL	280	183	204	-	-
	SBL	250	118	328	-	78
17. Schilling Ave & Mira Mesa Blvd	EBL	260	0	140	-	-
	WBL	195	33	119	-	-
	NBR	55	30	24	-	-
	SBL	95	160	106	65	11
18. Aderman Ave & Mira Mesa Blvd	EBL	145	41	48	-	-
	WBL	130	29	113	-	-
	SBL	100	226	108	126	8
	EBL	275	119	216	-	-

Intersection	Movement	Pocket Length	95% Queue Length (AM)	95% Queue Length (PM)	Excess Queue (AM) (ft)	Excess Queue (PM) (ft)
19. Parkdale Ave & Mira Mesa Blvd	WBL	255	50	211	-	-
	NBL	240	202	108	-	-
	NBR	100	45	39	-	-
	SBL	100	157	73	57	-
	SBR	100	173	0	73	-
20. Reagan Rd & Mira Mesa Blvd	EBL	235	139	218	-	-
	WBL	240	44	102	-	-
	WBR	80	0	13	-	-
	NBL	100	420	394	320	294
	NBT/R	250	71	192	-	-
	SBL	110	145	110	35	-
	SBT/R	290	285	145	-	-
21. Mira Mesa Mall Driveways & Mira Mesa Blvd	EBL	140	83	217	-	77
	WBL	135	25	140	-	5
	NBL	90	58	133	-	43
	NBR	105	0	138	-	33
	SBL	55	48	203	-	148
22. Camino Ruiz & Mira Mesa Blvd	EBL	190	117	189	-	-
	WBL	200	109	280	-	80
	WBR	620	0	202	-	-
	NBL	270	216	374	-	104
	NBR	100	201	159	101	59
	SBL	250	346	326	96	76
23. New Salem St/Marauder Wy & Mira Mesa Blvd	EBL	250	242	66	-	-
	EBR	125	25	15	-	-
	WBL	145	184	112	39	-
	NBL	100	244	321	144	221
	SBL	150	308	284	158	134
	SBR	150	3	0	-	-
24. Westonhill Dr & Mira Mesa Blvd	EBL	175	66	207	-	32
	WBL	265	35	125	-	-
	NBL	150	152	138	2	-
	SBL	225	358	166	133	-
25. Greenford Dr & Mira Mesa Blvd	EBL	250	18	32	-	-
	WBL	250	55	197	-	-
26. Westmore Rd/Marbury Ave & Mira Mesa Blvd	EBL	250	65	28	-	-
	WBL	250	138	430	-	180
27. Black Mountain Rd & Mira Mesa Blvd	EBL	250	241	338	-	88
	EBR	400	111	67	-	-
	WBL	250	152	204	-	-
	NBL	260	198	155	-	-
	NBR	275	53	140	-	-

Intersection	Movement	Pocket Length	95% Queue Length (AM)	95% Queue Length (PM)	Excess Queue (AM) (ft)	Excess Queue (PM) (ft)
	SBL	440	396	308	-	-
	SBR	380	351	119	-	-
28. Westview Pkwy & Mira Mesa Blvd	EBL	245	101	198	-	-
	WBL	375	495	475	120	100
	WBR	250	66	768	-	518
	NBL	245	76	196	-	-
	NBR	200	80	91	-	-
	SBL	260	425	319	165	59
	SBR	115	192	105	77	-
29. I-15 SB Ramps & Mira Mesa Blvd	SBL	570	138	219	-	-
	SBR	290	773	804	483	514
30. I-15 NB Ramps & Mira Mesa Blvd	WBR	60	0	0	-	-
	NBR	496	138	117	-	-
31. Black Mountain Rd & Mercy Rd	WBL	280	291	339	12	59
	WBR	240	0	77	-	-
	NBL	370	59	50	-	-
	SBL	430	390	242	-	-
32. Camino Santa Fe & Miramar Rd	EBL	550	400	561	-	11
	WBL	330	14	43	-	-
	NBL	75	33	82	-	7
	SBL	270	71	120	-	-
33. Commerce Ave & Miramar Rd	EBL	350	92	90	-	-
	WBL	465	106	77	-	-
	SBR	180	5	32	-	-
34. Production Ave & Miramar Rd	EBL	250	115	96	-	-
	SBR	65	26	20	-	-
35. Distribution Ave & Miramar Rd	EBL	75	104	145	29	70
36. Miramar Wy & Miramar Rd	EBL	190	79	68	-	-
	WBL	125	5	45	-	-
	NBL	45	0	94	-	49
37. Carroll Canyon Rd & Miramar Rd	EBL	150	258	163	108	13
	WBL	100	1	12	-	-
	WBR	315	0	27	-	-
	SBL	380	141	374	-	-
38. Alesmith Ct / Empire St & Miramar Rd	EBL	115	49	21	-	-
39. Dowdy Dr & Miramar Rd	EBL	190	208	183	18	-
	WBL	110	2	14	-	-
	SBL	250	157	270	-	20
40. Cabot Dr & Miramar Rd	EBL	130	98	187	-	57
	WBL	100	6	40	-	-

Intersection	Movement	Pocket Length	95% Queue Length (AM)	95% Queue Length (PM)	Excess Queue (AM) (ft)	Excess Queue (PM) (ft)
	SBL	170	121	173	-	3
41. Camino Ruiz & Miramar Rd	EBL	300	98	254	-	-
	WBR	310	0	8	-	-
	SBL	400	447	314	47	-
42. Clayton Dr/Mitscher Wy & Miramar Rd	EBL	200	31	57	-	-
	EBR	350	31	33	-	-
	WBL	375	111	103	-	-
	NBL	400	171	327	-	-
43. Black Mountain Rd & Miramar Rd	EBL	290	77	134	-	-
	WBL	50	0	21	-	-
	SBL	300	85	355	-	55
	SBR	300	26	36	-	-
44. Kearny Villa Rd & Miramar Rd	EBL	175	62	65	-	-
	EBR	410	89	199	-	-
	WBL	135	23	86	-	-
	NBL	190	562	325	372	135
	SBL	210	98	232	-	22
45. I-15 SB Ramps & Miramar Rd	SBL	500	101	23	-	-
46. I-15 NB Ramps & Miramar Rd	EBR	225	35	82	-	-
	WBR	250	27	21	-	-
	NBL	580	228	190	-	-
	NBR	580	59	151	-	-
47. Camino Santa Fe & Carroll Rd	EBL	175	132	416	-	241
	EBR	240	26	128	-	-
	WBL	85	97	139	12	54
	NBL	200	467	183	267	-
	NBR	100	16	32	-	-
	SBL	225	176	134	-	-
	SBR	310	157	24	-	-
48. Camino Santa Fe & Flanders Dr	WBT/R	280	456	76	176	-
	NBL	250	115	153	-	-
	SBL	225	94	463	-	238
49. Camino Ruiz & Carroll Canyon Rd	EBL	245	11	10	-	-
	NBL	370	86	26	-	-
50. Camino Ruiz & Activity Rd	WBT/L	140	153	88	13	-
	NBL	130	10	28	-	-
	SBL	170	228	1232	58	1062
51. I-805 SB Off-Ramp/Carroll Canyon Rd & Sorrento Valley Rd	EBR	180	31	19	-	-
	WBL	350	30	52	-	-
	NBL	245	37	59	-	-
	NBR	315	27	217	-	-

Intersection	Movement	Pocket Length	95% Queue Length (AM)	95% Queue Length (PM)	Excess Queue (AM) (ft)	Excess Queue (PM) (ft)
52. Vista Sorrento Pkwy & Mira Mesa Blvd	EBL	350	155	52	-	-
53. Vista Sorrento Pkwy & Lusk Blvd	WBL	310	60	231	-	-
	SBL	200	234	50	34	-
54. Pacific Center Blvd & Lusk Blvd	EBL	250	148	22	-	-
	WBL	130	35	10	-	-
55. Scranton Rd & Carroll Canyon Rd	EBL	170	21	14	-	-
	WBR	130	17	53	-	-
	SBL	90	57	59	-	-
56. Pacific Heights Blvd & Carroll Canyon Rd	EBL	125	238	96	113	-
57. Lusk Blvd & Barnes Canyon Rd	EBL	155	140	79	-	-
	EBT/R	155	73	72	-	-
	WBL	150	46	57	-	-
	NBL	120	56	33	-	-
	NBR	245	22	26	-	-
	SBL	145	81	85	-	-
58. Pacific Heights Blvd & Pacific Center Blvd	EBL	190	39	31	-	-
	EBR	270	3	15	-	-
	WBL	220	23	106	-	-
	NBL	90	222	60	132	-
59. Pacific Mesa Blvd & Pacific Center Blvd	EBL	150	11	23	-	-
	WBL	150	76	313	-	163
	NBL	175	198	40	23	-
60. Business Access Rd & Carroll Canyon Rd	EBL	175	18	7	-	-
61. Scranton Rd & Mira Sorrento Pl	NBL	110	83	332	-	222
62. Youngstown Wy & Carroll Canyon Rd	EBL	230	19	21	-	-
63. Black Mountain Rd & Westview Pkwy	WBL	165	45	41	-	-
	NBL	265	6	7	-	-
	SBL	250	214	324	-	74
64. Black Mountain Rd & Capricorn Wy	EBL	200	819	1319	619	1119
	WBL	125	145	76	20	-
	NBL	260	216	240	-	-
	SBL	270	91	79	-	-
65. Black Mountain Rd & Galvin Ave	WBL	195	98	48	-	-
	NBL	145	3	3	-	-
	SBL	250	76	56	-	-

Intersection	Movement	Pocket Length	95% Queue Length (AM)	95% Queue Length (PM)	Excess Queue (AM) (ft)	Excess Queue (PM) (ft)
66. Black Mountain Rd & Gemini Ave	EBL	160	131	465	-	305
	EBR	85	33	50	-	-
	WBL	75	36	79	-	4
	WBT/R	75	17	30	-	-
	NBL	150	103	158	-	8
	SBL	130	51	79	-	-
67. Black Mountain Rd & Hillery Dr	EBL	90	121	235	31	145
	WBL	285	197	153	-	-
	WBR	340	42	34	-	-
	NBL	210	355	310	145	100
	NBR	135	152	370	17	235
	SBL	210	292	411	82	201
68. Black Mountain Rd & Miramar College	WBL	170	42	116	-	-
	SBL	160	271	297	111	137
69. Black Mountain Rd & Gold Coast Dr	EBL	145	234	316	89	171
	WBL	145	88	64	-	-
	NBL	310	422	218	112	-
	SBL	210	287	229	77	19
70. Black Mountain Rd & Carroll Canyon Rd	WBL	400	345	109	-	-
	WBR	135	151	198	16	63
	NBL	185	23	30	-	-
	SBL	310	203	244	-	-
71. Maya Linda Rd & Carroll Canyon Rd	EBL	145	26	23	-	-
	WBL	60	116	72	56	12
	SBL	55	310	126	255	71
72. Black Mountain Rd & Maya Linda Rd	WBL	105	119	35	14	-
	NBL	275	23	14	-	-
	SBL	175	16	60	-	-
73. Black Mountain Rd/Kearny Villa Rd & Black Mountain Rd/Carroll Centre Rd	EBL	220	95	550	-	330
	WBL	70	118	129	48	59
	NBL	180	247	65	67	-
	SBL	220	94	58	-	-
	SBR	250	1160	37	910	-
74. Kearny Mesa Rd & Kearny Villa Rd	-	-			-	-
75. Black Mountain Rd & Activity Rd	EBL	120	167	884	47	764
	NBL	155	235	154	80	-
	SBL	120	25	9	-	-

Intersection	Movement	Pocket Length	95% Queue Length (AM)	95% Queue Length (PM)	Excess Queue (AM) (ft)	Excess Queue (PM) (ft)
76. Westview Pkwy & Mira Lee Wy	WBR	205	46	17	-	-
	NBL	305	83	47	-	-
	NBR	325	41	83	-	-
	SBL	165	51	114	-	-
77. Westview Pkwy & Galvin Ave	NBL	165	185	130	20	-
78. I-15 SB Ramps & Carroll Canyon Rd	WBL	115	98	139	-	24
79. I-15 NB Ramps & Carroll Canyon Rd	EBL	125	107	380	-	255
	NBL	365	330	218	-	-
	NBR	165	117	94	-	-
80. Kearny Mesa Rd & Miramar Rd	EBL	160	63	47	-	-
	WBL	170	23	91	-	-
81. Camino Santa Fe & Top Gun St	EBL	265	73	402	-	137
	NBL	270	177	106	-	-
82. Camino Santa Fe & Miratech Dr	EBL	280	17	111	-	-
	EBR	375	0	18	-	-
	NBL	270	24	10	-	-
83. Camino Santa Fe & Summers Ridge Rd	EBL	270	3	13	-	-
	EBR	230	0	5	-	-
	NBL	245	41	11	-	-
84. Camino Santa Fe & Trade St	WBL	290	146	217	-	-
	NBL	185	36	17	-	-
	SBL	200	155	114	-	-
85. Nancy Ridge Dr & Carroll Canyon Rd	WBL	75	12	6	-	-
	NBL	80	46	110	-	30
86. Rehco Rd & Carroll Rd	EBL	110	27	7	-	-
	WBL	150	23	12	-	-
87. Carroll Rd & Kenamar Dr	WBR	100	0	3	-	-
	NBL	275	8	5	-	-
	SBL	130	42	43	-	-
88. Camino Ruiz & Teresa Dr/Capricorn Wy	EBR	70	26	20	-	-
	WBR	130	54	37	-	-
	NBL	140	39	73	-	-
	SBL	140	77	302	-	162
89. Camino Ruiz & Gold Coast Dr	EBL	115	340	139	225	24
	WBL	215	235	113	20	-
	NBL	130	99	109	-	-
	SBL	100	96	281	-	181
90. Westview Pkwy & Capricorn Wy	EBR	130	34	41	-	-
	WBL	100	58	40	-	-
	NBL	270	142	167	-	-
	SBL	140	8	11	-	-

Intersection	Movement	Pocket Length	95% Queue Length (AM)	95% Queue Length (PM)	Excess Queue (AM) (ft)	Excess Queue (PM) (ft)
91. Camino Ruiz & Aquarius Dr	NBL	275	8	10	-	-
	SBL	180	18	450	-	270
92. Pacific Heights Blvd & Barnes Canyon Rd	EBL	185	137	55	-	-
	NBL	230	140	71	-	-
	SBL	150	16	42	-	-

4.4.7 VEHICULAR QUALITY – FREEWAY LEVEL OF SERVICE

I-805 and I-15 border to the Mira Mesa community on the west and east sides, respectively, providing local and regional mobility. A description of each freeway is provided within the Mira Mesa study area context, followed by an operational V/C analysis of freeway segments.

Interstate 805

Interstate 805 (I-805) is a north-south facility that splits from Interstate 5 (I-5) in Sorrento Valley and runs parallel to I-5 to just north of the US-Mexico International Border, where the freeways merge back together. Within the Mira Mesa community study area, a majority of the I-805 segments carry four mainline lanes in each direction with on- and off-ramps for local access at Miramar Road and Mira Mesa Boulevard/Sorrento Valley Road. The I-805 gives access to State Route 56 (SR-56) to the north and State Route 163 (SR-163) to the south on the community.

Interstate 15

Interstate 15 (I-15) is a north-south facility that runs along the eastern border of the Mira Mesa study area. I-15 extends north from San Diego County through Riverside County then reaching the US-Canada International Border in Montana, passing through the states of Nevada Utah and Idaho. The majority of I-15 has six mainline lanes in each direction as well as two dynamic High-Occupancy Vehicle (HOV) lanes in each direction. I-15 provides access to SR-56 to the north, SR-163 and SR-52 in the south. Within the vicinity of the study area, there are four interchanges at Mercy Road, Mira Mesa Boulevard, Carroll Canyon Road, and Miramar Road.

Table 4-33 presents freeway characteristics and the level of service analysis results for mainline segments within the vicinity of the Mira Mesa community. V/C, density, and LOS values were calculated along the mainline freeway segments, excluding weave, diverge and merge movements. Volume data was obtained from Caltrans Traffic Volumes on California State Highways (2017). Peak Hour volume freeway information can be found in **Appendix H**. Auxiliary lanes and HOV lanes were not included in the number of lanes on a basic freeway segment. Instead the auxiliary lanes were included in the weave analysis.

In general, each of the freeway segments are operating under unsatisfactory conditions with a LOS E or F in either or both of the AM or PM peak hours in at least one direction. Based on the analysis, northbound I-805 and southbound I-15 are more heavily utilized during the AM peak, while southbound I-805 and both direction of I-15 are more heavily utilized during the PM peak. The worst congestion occurs on the southbound portion of I-805 between Sorrento Valley Boulevard and Mira Mesa Boulevard, where there are only three general purpose travel lanes.

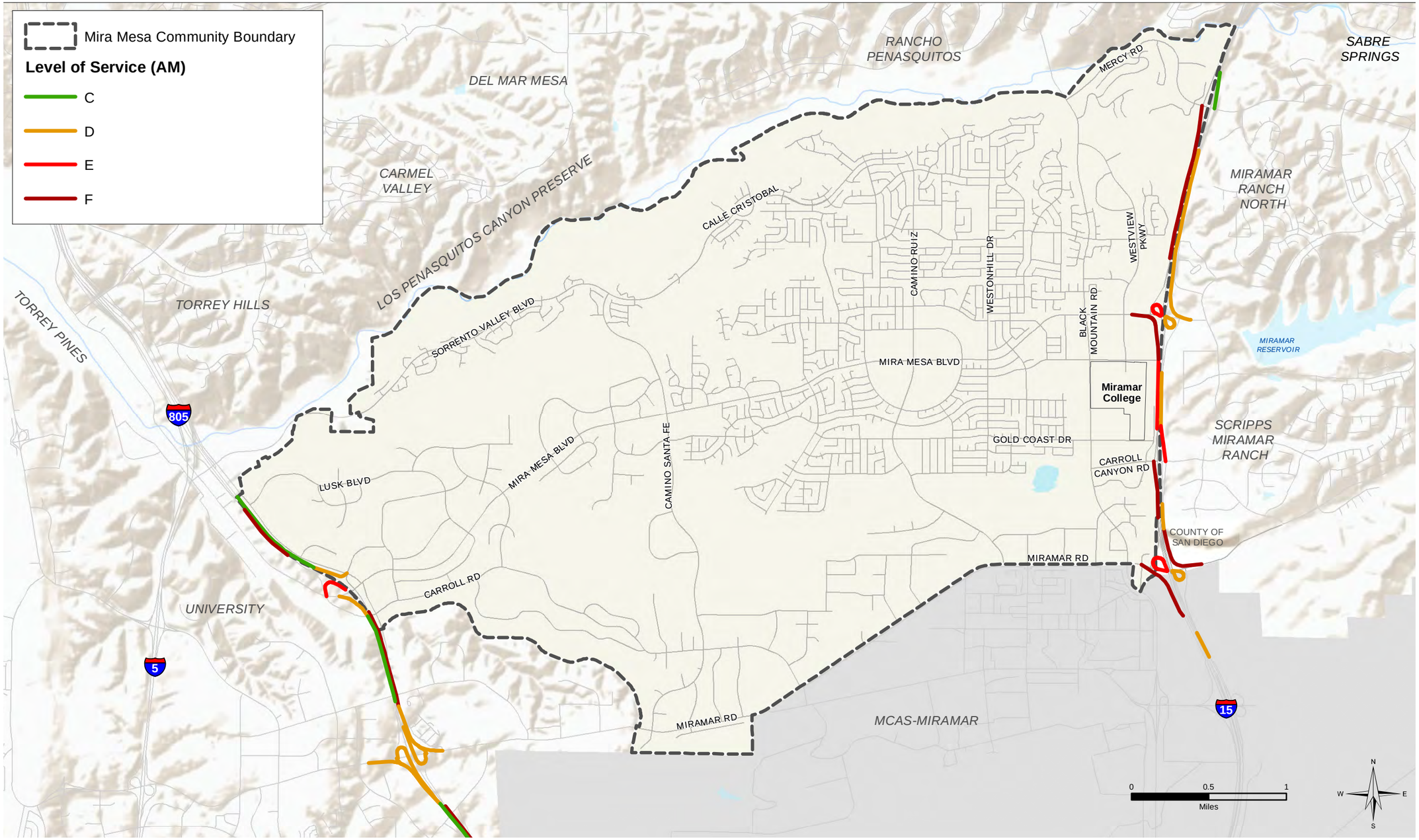
Figure 4-50 and **Figure 4-51** present the freeway LOS results for the mainline, diverge, merge and weave segments during the AM and PM peak periods, respectively.

Table 4-33 Existing Freeway Mainline Operations Analysis

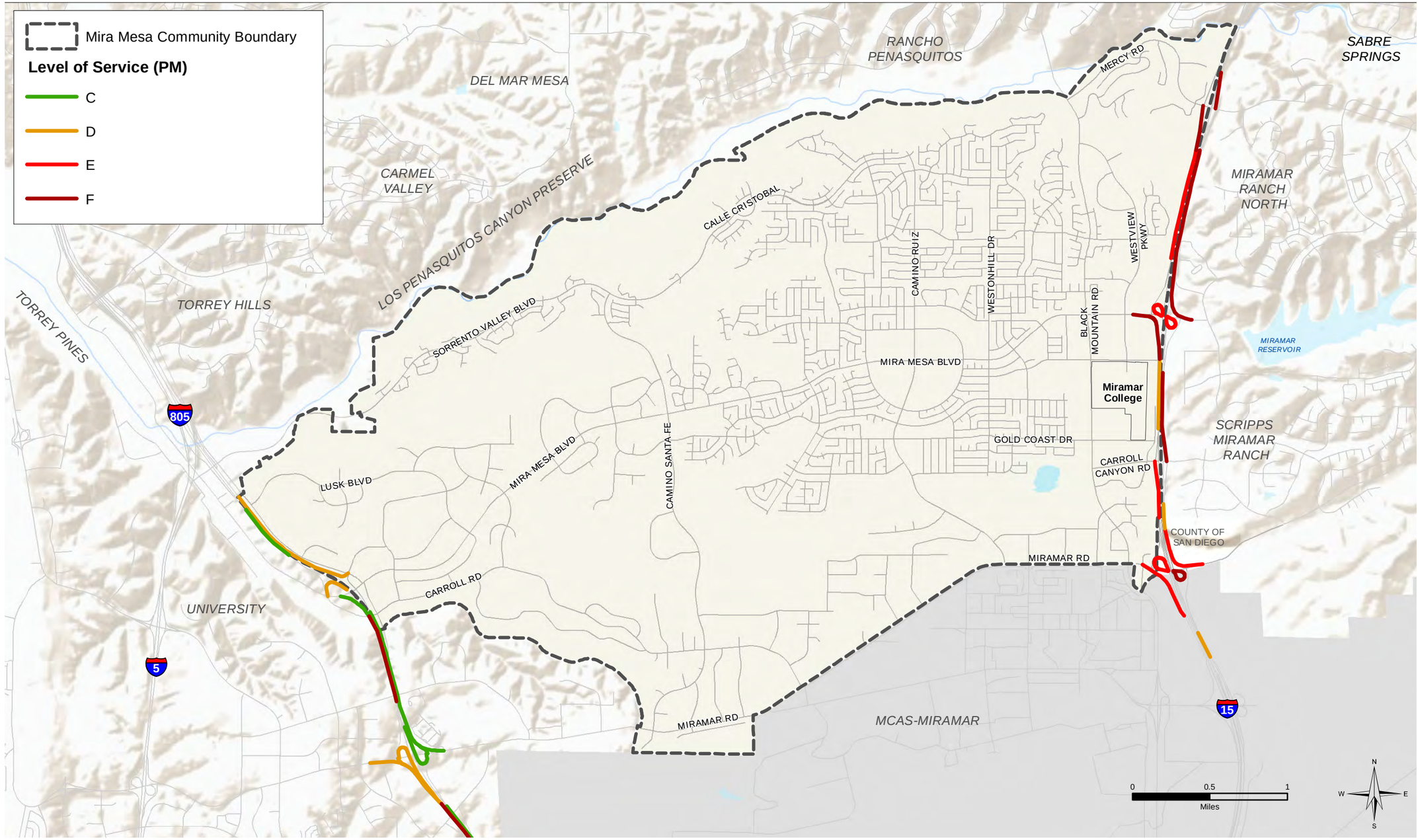
Freeway	Direction	Segment	ADT[a]	# of Lanes	Capacity[b]	D[c]	K[d]	HV[e]	Volume	V/C	Density	LOS
AM Peak Hour												
I-15	NB	Between Miramar Way and Miramar Road	304,000	6	14,400	57.1%	7.9%	4%	10,241	0.71	30.8	D
		Between Miramar Road and Carroll Canyon Road	287,000	6	14,400	57.1%	7.7%	4%	12,890	0.90	48.5	F
		Between Carroll Canyon Road to Mira Mesa Boulevard	277,000	5	12,000	57.6%	7.9%	4%	12,584	1.05	79.7	F
		Between Mira Mesa Boulevard and Mercy Road	268,000	6	12,000	57.6%	7.9%	4%	12,175	1.01	70.1	F
	SB	Between Mercy Road and Mira Mesa	268,000	6	12,000	57.6%	7.9%	4%	8,970	0.75	33.8	D
		Between Mira Mesa Boulevard and Carroll Canyon Road	277,000	6	14,400	57.6%	7.9%	4%	9,271	0.64	27.0	D
		Between Carroll Canyon Road and Miramar Road	287,000	6	14,400	57.1%	7.9%	4%	9,668	0.67	28.6	D
		Between Miramar Road and Miramar Way	304,000	7	16,800	57.1%	7.9%	4%	13,653	0.81	38.7	E
I-805	NB	Between Nobel Drive and Miramar Road	186,000	4	9,600	65.5%	7.0%	6%	8,497	0.89	49.3	F
		Between Miramar Road and Mira Mesa Boulevard	185,000	4	9,600	65.5%	7.0%	6%	8,452	0.88	48.6	F
		Between Mira Mesa Boulevard and Sorrento Valley Road	164,000	4	9,600	61.6%	7.3%	6%	4,451	0.46	23.7	C

	SB	Between Sorrento Valley Road and Mira Mesa Boulevard	164,000	3	7,200	61.6%	7.3%	6%	7,346	1.02	82.8	F
		Between Mira Mesa Boulevard and Miramar Road	185,000	4	9,600	65.5%	7.0%	6%	4,461	0.46	23.7	C
		Between Miramar Road and Nobel Drive	186,000	4	9,600	65.5%	7.0%	6%	4,486	0.47	23.7	C
PM Peak Hour												
I-15	NB	Between Miramar Way and Miramar Road	304,000	6	14,400	57.1%	7.9%	4%	12,186	0.85	42.0	E
		Between Miramar Road and Carroll Canyon Road	287,000	6	14,400	57.1%	7.7%	4%	10,480	0.73	32.3	D
		Between Carroll Canyon Road to Mira Mesa Boulevard	277,000	5	12,000	57.6%	7.9%	4%	10,238	0.85	43.4	E
		Between Mira Mesa Boulevard and Mercy Road	268,000	6	12,000	57.6%	7.9%	4%	9,906	0.83	40.5	E
	SB	Between Mercy Road and Mira Mesa	268,000	6	12,000	57.6%	7.9%	4%	10,918	0.91	50.5	F
		Between Mira Mesa Boulevard and Carroll Canyon Road	277,000	6	14,400	57.6%	7.9%	4%	11,284	0.78	36.7	E
		Between Carroll Canyon Road and Miramar Road	287,000	6	14,400	57.1%	7.9%	4%	11,504	0.80	38.0	E
		Between Miramar Road and Miramar Way	304,000	7	16,800	57.1%	7.9%	4%	11,101	0.66	27.7	D
I-805	NB	Between Nobel Drive and Miramar Road	186,000	4	9,600	65.5%	7.0%	6%	5,600	0.58	24.3	C

		Between Miramar Road and Mira Mesa Boulevard	185,000	4	9,600	65.5%	7.0%	6%	5,570	0.58	24.1	C
		Between Mira Mesa Boulevard and Sorrento Valley Road	164,000	4	9,600	61.6%	7.3%	6%	4,451	0.46	23.7	C
	SB	Between Sorrento Valley Road and Mira Mesa Boulevard	164,000	3	7,200	61.6%	7.3%	6%	6,930	0.96	66.2	F
		Between Mira Mesa Boulevard and Miramar Road	185,000	4	9,600	65.5%	7.0%	6%	8,767	0.91	53.4	F
		Between Miramar Road and Nobel Drive	186,000	4	9,600	65.5%	7.0%	6%	8,815	0.92	54.2	F



Existing Freeway Level of Service (AM Peak)



Existing Freeway Level of Service (PM Peak)

4.4.8 VEHICULAR QUALITY – FREEWAY RAMP METERING ANALYSIS

Ramp meter analysis was conducted at all freeway ramp locations where metering is in place for either the AM or PM peak hours. Ramp meter rates were obtained from Caltrans District 11 and are provided in **Appendix H**. **Table 4-34** presents the ramp metering analysis results for these ramp meter locations. As shown in the table, no ramp shows a delay beyond 15 minutes. Most ramps are able to use the most restrictive ramp meter; only five locations were modified from the most restrictive rate to minimize queues at the ramp:

- Mira Mesa Boulevard westbound to I-15 Southbound (AM Peak)
- Mira Mesa Boulevard eastbound to I-15 Southbound (AM Peak)
- Miramar Road eastbound to I-805 Northbound (AM and PM Peaks)
- Mercy Road to I-15 Southbound
- Mercy Road to I-15 Northbound

Table 4-34 Existing Ramp Meter Analysis

Location			Lane Type	Total Ramp Volume	Meter Rate Seconds/Cycle	Total Vehicles Serviced per hour/lane	Existing Conditions		
Freeway	Segment	Direction					Excess Demand (veh/hr)	Delay (min)	Queue (ft)
AM Peak Hour									
I-15	Mercy Road	SB	2 GP	1400	560*	366	0	0	0
			1 HOV			183	1	1	1
	Mira Mesa Boulevard	WB to SB	1 GP	858	686*	686	0	0	10
			1 HOV			172	3	3	3
		EB to SB	2 GP	1589	636*	636	0	0	0
			1 HOV			318	1	1	1
	Carroll Canyon Road	SB	2 GP	720	542	360	0	0	10
			0 HOV			0	0	0	0
	Miramar Road	WB to SB	2 GP	846	727	423	0	0	0
			0 HOV			0	1	1	1
		EB to SB	2 GP	555	523	222	0	0	0
			1 HOV			111	0	0	0
I-805	Miramar Road	EB to NB	1 GP	802	744*	642	0	0	0
			1 HOV			160	0	0	0
PM Peak Hour									
I-15	Mercy Road	NB	2 GP	1112	460*	445	0	0	0
			1 HOV			222	0	0	0
		SB	2 GP	1195	480*	478	0	0	0
			1 HOV			239	0	0	0
	Mira Mesa Boulevard	EB to NB	2 GP	1186	726	593	0	0	0
			0 HOV			0	0	0	0
		WB to NB	1 GP	549	576	439	0	0	0
			1 HOV			110	2	2	2
		WB to SB	1 GP	374	526	299	0	0	0
			1 HOV			75	0	0	0
		EB to SB	2 GP	838	442	335	0	0	0
			1 HOV			168	0	0	0
	Carroll Canyon Road	NB	1 GP	709	530	567	37	4	930
			1 HOV			142	1	1	1
		SB	2 GP	715	492	358	0	0	0
			0 HOV			0	1	1	1
	Miramar Road	EB to NB	2 GP	894	432	447	15	2	375
			0 HOV			0	2	0	0

		WB to NB	1 GP	116	271	116	0	0	0
			0 HOV			0	0	0	0
		WB to SB	2 GP	725	778	363	0	0	0
			0 HOV			0	0	0	0
		EB to SB	2 GP	1424	559	570	11	1	265
			1 HOV			285	1	1	1
I-805	Mira Sorrento Valley Place/Vista Sorrento Parkway	NB	2 GP	1516	756	606	0	0	0
		SB	1 HOV			303	0	0	0
	Sorrento Valley Road	WB to SB	3 GP	1267	900	422	0	0	0
			0 HOV			0	0	0	0
		EB to SB	2 GP	1063	752	425	0	0	0
			1 HOV			213	0	0	0
	Miramar Road	EB to NB	1 GP	1374	996*	1099	103	6	2580
			1 HOV			275	0	0	0
		WB to NB	1 GP	804	446	357	0	0	0
			1 HOV			89	0	0	0
		WB to SB	1 GP	640	704	512	0	0	0
			1 HOV			128	1	1	1
		EB to SB	2 GP	1016	593	406	0	0	0
			1 HOV			203	0	0	0

Notes:

(a) The ramp meter rate represents the most restrictive rate obtained from Caltrans unless marked with an *. These rates may not result in queue lengths that reflect field observations.
* Rate was adjusted from most restrictive to minimize queues at the ramp

(b) Volumes from I-805 @ Miramar Road interchange were taken from the University CPU existing conditions report turning movement volumes

(c) HOV lanes were assumed to have 20% of total traffic

(d) Delays exceeding 15-minutes are shown in **Bold**.

4.4.9 VEHICLE CONNECTIVITY

VMT changes between existing and proposed land uses will be evaluated in the future conditions evaluations.

4.5 PARKING

Parking within the Mira Mesa community consists of public on-street parking, private off-street parking for local businesses and residents, and public parking lots.

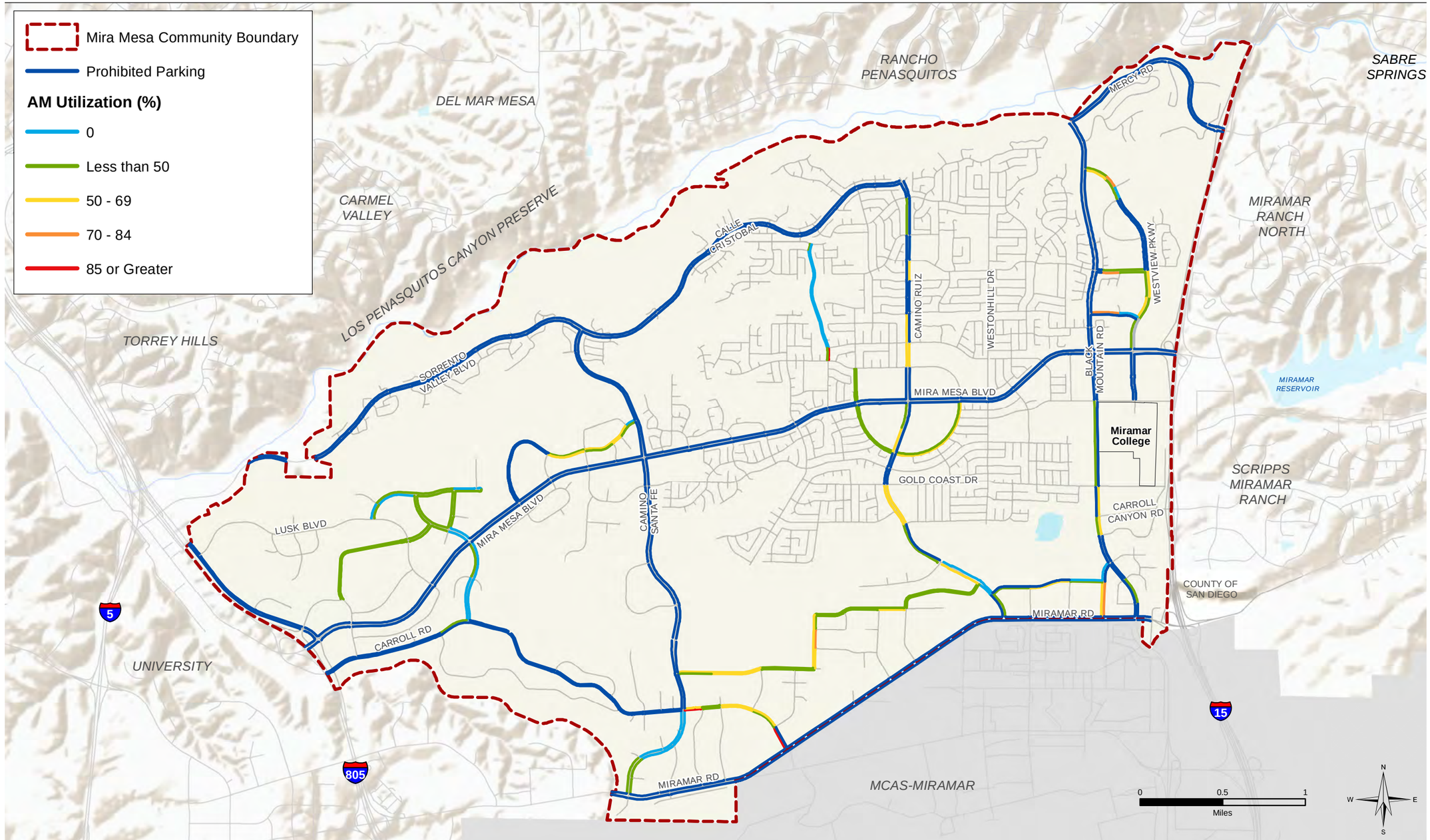
Public on-street parking is prohibited along all or sections of the following corridors:

- Mira Mesa Boulevard
- Black Mountain Road
- Sorrento Valley Boulevard
- Miramar Road
- Camino Santa Fe
- Vista Sorrento Parkway
- Carroll Road
- Camino Ruiz
- Mercy Road
- Westview Parkway

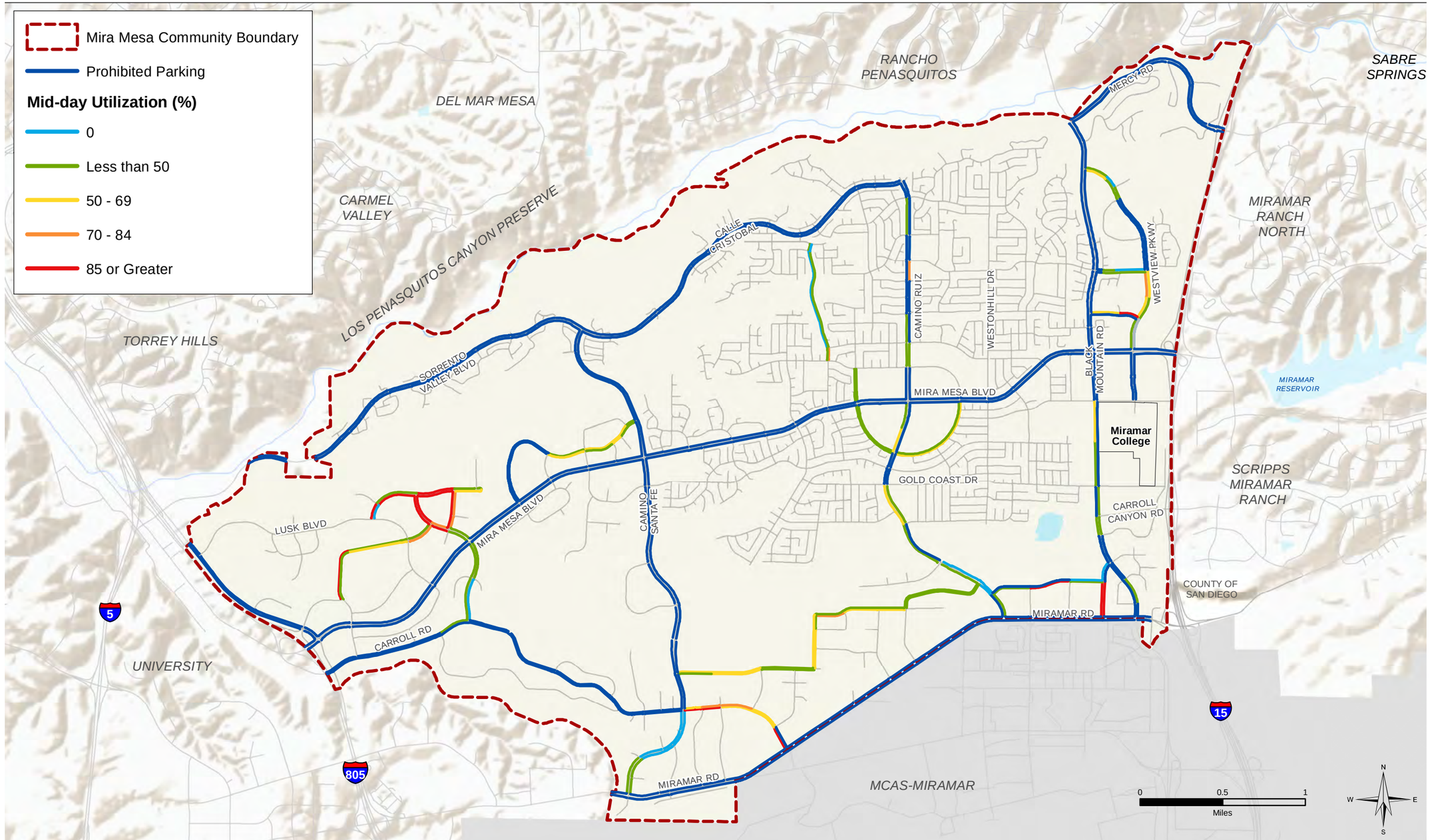
To determine relative parking utilization where on-street parking is permitted in the existing condition, a "drive-by windshield" parking occupancy survey was conducted over three time periods (AM, midday, and PM) along the primary study roadways. Figure 4-52, Figure 4-53, and Figure 4-54 display the parking occupancy survey results for the AM, mid-day, and PM peak hours, respectively.

Parking utilization was observed to be 85% or greater in the areas surrounding employment centers along Pacific Center Boulevard, Pacific Heights Boulevard, Pacific Mesa Boulevard, Scranton Road, Carroll Road, Activity Road and Black Mountain Road, especially in the mid-day peak hour. Other roadways with higher parking utilization include Maurader Way, Westview Parkway, and Galvin Avenue, as well as sections along Camino Ruiz. These roadway segments surround shopping centers, schools and parks, that may not have sufficient parking facilities leading to overflow on-street parking. In general, parking demand was greater during the mid-day and PM peak hours. A majority of the parking segments that front residential land uses, such as Montongo Street and Camino Ruiz, are generally less than 70% occupied during the three peak periods.

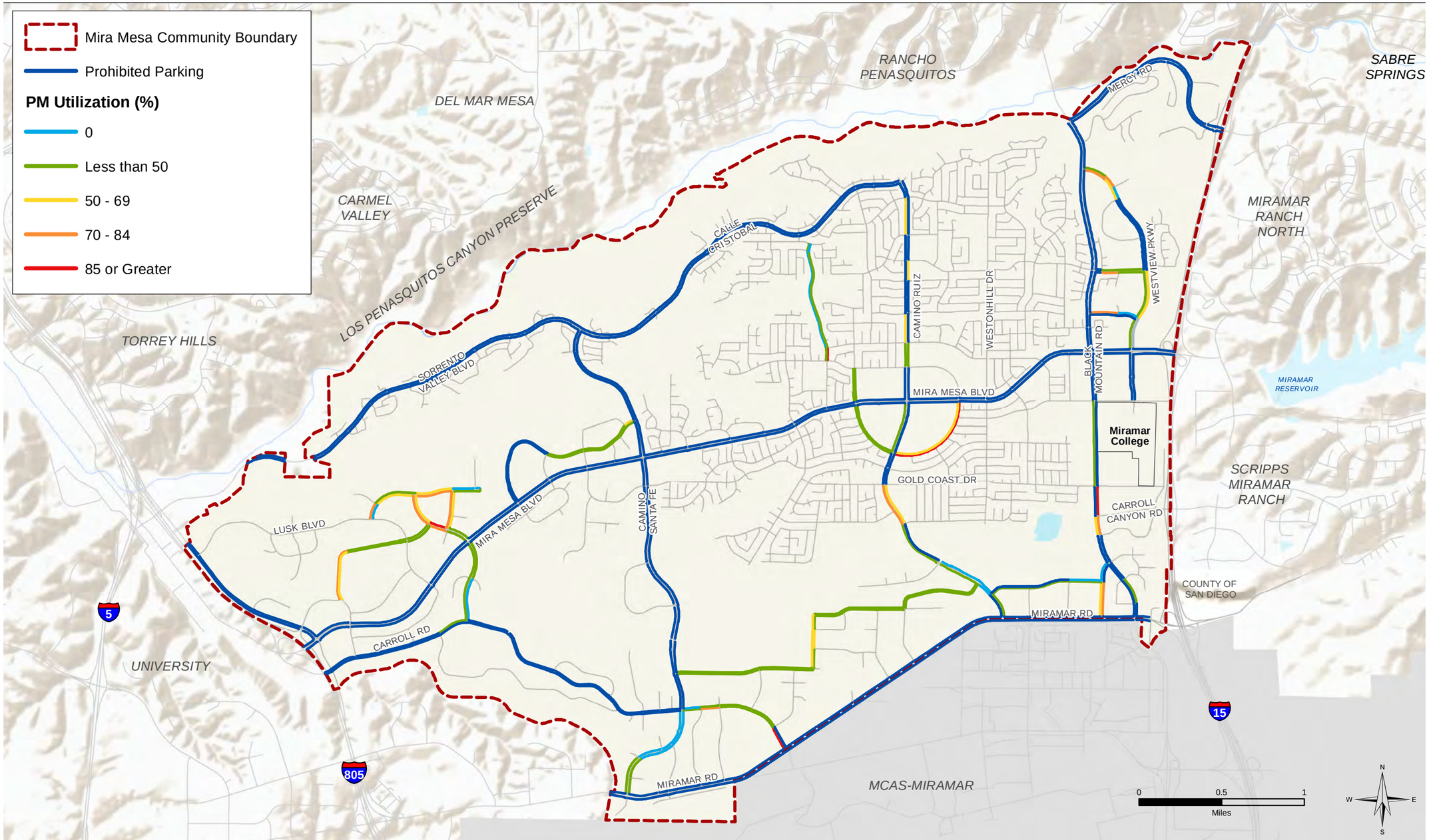
Detailed parking utilization data is summarized in **Appendix I**.



Parking Utilization (AM Peak)



Parking Utilization (Mid-Day Peak)



Parking Utilization (PM Peak)

4.6 INTELLIGENT TRANSPORTATION SYSTEMS

Use of Intelligent Transportation Systems (ITS) can provide many benefits to a mobility network, including improving travel time, providing transit bypass methods, helping relay valuable traffic-related information to vehicular and non-vehicular users, and providing guidance to key destinations.

The 2008 City of San Diego General Plan Mobility Element identifies the following goals for integrating ITS into the mobility network:

- A transportation system which operated efficiently, saves energy, and reduces negative environmental impacts.
- A safe transportation system.
- A transportation system that effectively uses appropriate technologies.

In 2014, the City of San Diego completed the Traffic Signal Communication Master Plan as a means to modernize the traffic signal system. The resulting improved coordination will increase public safety, shorten commutes, reduce greenhouse gas emissions, and increase mobility at intersections for all modes of travel. The Traffic Signal Communication Master Plan identified the following 5 intersections within Mira Mesa as having traffic signal communication gaps (signals without an existing communication line to connect with) that inhibit coordination:

- Miramar Road and Kearny Villa Road
- Miramar Road and Kearny Mesa Road
- Mercy Road and Alemania Road
- Mercy Road and Kika Court
- Carroll Road and Rehco Road

Adaptive Traffic Signal (ATS) Control technology adjusts the timing to accommodate varying traffic patterns. This technology improves travel time reliability by progressively moving vehicles through green lights, reduce congestion by creating smoother traffic flow along a corridor. The following corridors have adaptive traffic signal controllers:

- Lusk Boulevard – Vista Sorrento Parkway to Mira Mesa Boulevard
- Mira Mesa Boulevard – Scranton Road to Mira Mesa Mall Driveways

4.7 TRANSPORTATION DEMAND MANAGEMENT

Transportation Demand Management (TDM) are a collection of programs and strategies that reduce the need for vehicle trips. Proper use of TDM results in several benefits, including improved transportation network efficiencies, reduced greenhouse gas emissions, and more active lifestyles.

The 2008 City of San Diego General Plan Mobility Element identified the following TDM goals:

- Reduced single-occupant vehicle traffic on congested streets and freeways.
- Improved performance and efficiency of the street and freeway system by means other than roadway widening or construction.
- Expanded travel options and improved personal mobility.

The City of San Diego's TDM program specifically serves to improve mobility, reduce congestion and air pollution, and provide options for employees and residents to commute to and from work. Typical TDM strategies include promoting:

- Teleworking
- Alternative Work Schedules
- Walking
- Bicycling
- Carpooling
- Vanpooling
- Transit
- Car-Share
- Mixed-use Development
- Other Transportation Options

The City of San Diego collaborates with SANDAG to encourage participation in citywide and regional TDM measures due to the fact that commute trips often cross local jurisdictional boundaries. SANDAG administers the regional TDM program known as iCommute, which provides the following programs and services:

- Employer Services Program – Free assistance to local business to help them develop and implement employee commuter benefit programs that lower costs, increase productivity, and help the environment.
- Vanpool Program – SANDAG contracts with vanpool vendors that provide vehicles, maintenance, and insurance. SANDAG also provides up to a $400 monthly subsidy to qualified vanpools.
- Guaranteed Ride Home (GRH) – Serves as a safety net for commuters who carpool, vanpool, ride transit, walk, or bike to work three or more times per work. GRH provides a free Uber ride or 24-hour car rental up to three times per year in the event of a family emergency, unscheduled overtime, or being stranded from a carpool or vanpool.
- Bike Encouragement Program – Supports bike commuting by providing Bike Month and Bike to Work Day events, and the San Diego Regional Bike Map. iCommute manages more than 800 bike lockers at more than 60 transit stations and Park & Ride lots throughout San Diego County.

- Walk, Ride, and Roll to School – Education and outreach program to increase the number of students who walk, bike, skate, or ride a scooter to school.
- Carpool Match – iCommute provides access to a database of commuters looking for a carpool match.
- Park & Ride Map – Map identifying the location of approximately 90 Park & Ride lots in the San Diego Region and southern Riverside County.

The iCommute program markets its various offerings through a variety of promotional campaigns, such as Bike Month and Rideshare Month. The iCommute website (www.icommutesd.com) provides links to additional resources and information that encourage alternatives to single occupant vehicle commutes.

The City of San Diego's land development policies require new developments to provide sufficient bicycle parking, employee showers and lockers, carpool parking, pedestrian paths, and a display of alternative transportation information. The City's Mobility Management section also serves as a resource to assist employers and developers in identifying and pursuing opportunities to implement TDM measures.

As new development occurs in Mira Mesa, TDM strategies and policies provide an opportunity to change travel behavior and reduce reliance on the automobile. TDM should be used in context with the land use and be complimented with network changes to be most effective.

4.8 AIRPORTS, PASSENGER RAIL, AND GOODS MOVEMENT

In addition to the standard roadway network mobility, the San Diego region relies on airports, passenger rail service, and a network of maritime and surface transportation routes to facilitate the movement of people and goods. This section briefly touches on these types of mobility and how they relate to Mira Mesa.

Airports

The City of San Diego General Plan Mobility Element identifies the following goals for airports:

- An air transportation system that fosters economic growth.
- Adequate capacity to serve the forecasted passenger and cargo needs at existing airports.
- An air transportation system that is integrated with a multi-modal surface transportation system that efficiently moves people and goods.
- An international airport to serve the region's long-term air transportation and economic needs.

The San Diego International Airport at Lindbergh Field is about 18 miles from the Mira Mesa community. Trips to and from the airport are primarily done using personal vehicles as there are limited transit options and is too far to walk or bike. The San Diego International Airport is the one of the busiest single-runway commercial service airports in the nation. In 2018, the San Diego International Airport served a record 24 million passengers, a 10 percent increase over the previous year. The airport is operated by the San Diego County Regional Airport Authority (SDRAA) and continues to grow its passenger use. Major plans/projects prepared by SDRAA will influence future access to and from the airport, including Destination Lindberg and the San Diego International Airport Master Plan.

Destination Lindbergh is a long-range planning effort to guide the ultimate build-out of the San Diego International Airport. The plan proposes an expanded configuration of the facility that attempts to minimize airport-related traffic impacts to adjacent communities, and improve intermodal access to the airport. The plan recommends improvements to the local and regional roadway networks providing access to the airport, as well as a new transit route to serve the airport. The Intermodal Transit Center (ITC) is proposed as an intermodal hub to facilitate airport access without the need for driving single occupant vehicles. The plans also indicate that existing trolley lines, the Coaster, Amtrak, new express bus routes, local bus routes, and the planned California High Speed Rail system will all be served by the ITC.

The current San Diego International Airport Master Plan was adopted in 2008 to serve as the future blueprint for the airport's 661 acres. The Master Plan provides guidance for the airport to meet anticipated growth for passengers, cargo and operations. Additionally, it outlines local roadway improvements to expand vehicular capacity and enhance airport access. The SDRAA is currently in the process of updating the Airport Master Plan.

Marine Corps Air Station (MCAS) Miramar is adjacent to the south of the community along Miramar Road. The MCAS Miramar Airport Master Plan area encompasses 23,065 acres, with over 15,000 service members and their families serving this location. The Master Plan identifies nearly 11 million square feet of new facility development capacity using the infill development model on 672 acres of developable land, across 4 districts. The MCAS Miramar Airport Land Use Compatibility Plan (ALUCP) provides for the orderly growth of the airport and the area surrounding the airport and safeguards the general welfare of the

inhabitants within the vicinity of the airport and the public in general. The ALUCP identifies airport land use compatibility policies and standards related to four airport-related factors: noise, safety, airspace protection and overflight.

Passenger Rail

The City of San Diego General Plan Mobility Element has identified "improving rail travel opportunities" as a goal. Any proposed enhancements to passenger rail service should help achieve this goal.

The COASTER is operated by the North County Transit District (NCTD), and runs in a north-south direction, providing service to eight stations between Santa Fe Depot and the Oceanside Transit Center. One of the stops is at the Sorrento Valley Station which is adjacent to the Mira Mesa community. The Southbound COASTER stops at the Sorrento Valley Station approximately every 30 minutes in the morning peak and approximately every 90 minutes in the afternoon peak with a break in the early afternoon. Conversely, the Northbound COASTER stops at the Sorrento Valley Station direction approximately every 90 minutes in the morning peak and approximately every 30 minutes in the afternoon with a break in the late morning.

This schedule reflects ridership trends of people primarily using it to travel to and from places north of Mira Mesa. The COASTER connects to four bus routes at the Sorrento Valley Station to help get to ultimate destinations. The Sorrento Valley Station is not within walkable or reasonable bicycle distance of many uses in Mira Mesa. Relocating the Sorrento Valley Station to provide more access options, such as pedestrian and bicycle first- and last-mile improvements has been recommended by SANDAG in the Regional Transportation Plan and will be considered in the Mira Mesa Community Plan Update.

The Pacific Surfliner is operated by Amtrak and runs in a north-south direction between downtown San Diego and San Luis Obispo via the greater Los Angeles area. The Pacific Surfliner stops at the Old Town Transit Center, Santa Fe Depot (downtown San Diego), and Solana Beach. The nearest Pacific Surfliner stop for access to Mira Mesa is at Solana Beach.

Goods Movement

Existing goods movement in San Diego is supported by infrastructure consisting of roadways, railways, maritime facilities and airports. The City of San Diego General Plan identifies the following policies related to goods movement:

- Support infrastructure improvements and use of emerging technologies that will facilitate the clearance, timely movement, and security of domestic and international trade, including facilities for the efficient intermodal transfer of goods between truck, rail, marine, and air transportation modes.
- Preserve property for planned roadway and railroad rights-of-way, marine and air terminals, and other needed transportation facilities.
- Support measures to alleviate on-street truck parking and staging and peak period truck usage on freeways. These measures may include, but are not limited to: designating off-street truck staging areas; shared use of park-and-ride lots; and shared use of other public and private parking lots where appropriate.

- Implement measures to minimize the impacts of truck traffic, deliveries, and staging in residential and mixed-use neighborhoods.
- Support alternatives to transporting hazardous materials by truck.

Truck Freight

The majority of goods in the San Diego region are transported by truck through the regional freeway network and local roadways. While the City of San Diego does not have a system of designated truck routes, regional truck access to Mira Mesa is provided via the adjacent I-5 and I-805 freeways. Truck access is necessary throughout the community due to the dispersal of commercial and industrial designated land uses. Industrial zoning in Mira Mesa exists primarily along the north side of Miramar Road and are currently buffered from residential and retail areas by Carroll Canyon. Miramar Road and Mira Mesa Boulevard are the primary east-west truck routes in the community. Camino Ruiz is the primary north-south truck route.

Table 4-35 presents the percent of trucks on local roadways within the study community.

Table 4-35 Existing Roadway Segment Analysis

Roadway Segment	Truck %
Sorrento Valley Blvd	
I-805 to Camino Santa Fe	3.6%
Calle Cristobal	
Camion Santa Fe to Camino Ruiz	4.4%
Mira Mesa Blvd	
I-805 to Pacific Heights Blvd	2.1%
Pacific Heights Blvd to Camino Santa Fe	4.0%
Camino Santa Fe to Parkdale Ave	5.8%
Camino Ruiz to Black Mountain Rd	8.3%
Black Mountain Rd to Westview Pkwy	2.2%
Westview Pkwy to I-15	2.9%
Carroll Canyon Rd	
Scranton Rd to Nancy Ridge Dr	1.1%
Miramar Rd	
Camino Santa Fe to Carroll Rd	6.3%
Carroll Rd to Black Mountain Rd	6.5%
Black Mountain Rd to I-15	6.7%
Camino Santa Fe	
Sorrento Valley Blvd to Carroll Rd	1.6%
Carroll Rd to Miramar Rd	1.9%
Camino Ruiz	
Calle Cristobal to Mira Mesa Blvd	6.1%
Mira Mesa Blvd to Miramar Rd	3.7%
Black Mountain Rd	
Westview Pkwy to Miramar Rd	3.0%

Rail Freight

Rail freight serves San Diego via the Los Angeles – San Diego – San Luis Obispo Rail Corridor (LOSSAN Corridor), which is one of the busiest rail corridors nationwide. The LOSSAN corridors follows the canyons along the western edge of the Mira Mesa community, with an at-grade crossing at Sorrento Valley Boulevard and grade separated crossings at I-805 and at Miramar Road near Camino Santa Fe.

Freight operations along the corridor are operated by the Burlington Northern Santa Fe Railway Company (BNSF). BNSF operates freight rail service along the same right-of-way as Amtrak and the Coaster passenger services. BNSF transports freight to points north and east of San Diego County, such as Los Angeles and Arizona. It also provides important rail connections to the south between the United States and Mexico.

Maritime Freight

The 10th Avenue Marine Terminal and the National City Marine Terminal, both located on the San Diego Bay, are the primary maritime ports serving San Diego and are far from the Mira Mesa community. Freight is then transported via truck, rail, and air throughout San Diego County and the rest of the United States.

Air Freight

Air freight transport companies such as FedEx, DHL Express and UPS operate out of the San Diego International Airport, which serves as the region's primary airport for air freight. Air freight is then transported via truck, rail, and/or maritime modes.

5 MOBILITY NEEDS AND FUTURE DIRECTION

This chapter provides a summary of pedestrian, bicycle, transit, and street and freeway mobility needs determined through the existing conditions analyses.

5.1 PEDESTRIAN

Nearly all trips involve a pedestrian connection from walking to/from a parked car to a building or simply walking to transit, a store, school, or employment. The surrounding environment can encourage, discourage, or dictate the length of walk trips depending on many different factors such as: sidewalks, trees for shading, lighting, interesting buildings or scenery to look at, other people outside, neighborhood destinations and a feeling of safety. Pedestrian environments that are inviting and land uses that promote interaction between pedestrian activities can help to increase walking as a means of transportation and recreation. Land use and street design recommendations that benefit pedestrians also contribute to the overall quality, vitality, and sense of community within a neighborhood.

Future improvements to the pedestrian environment in Mira Mesa should focus on areas where need is the greatest. Pedestrian areas for improvement identified in Mira Mesa include locations with high pedestrian activity and collisions, sidewalk connectivity issues, anticipated increases in pedestrian activity based on future land use, and high pedestrian priority as identified by the City of San Diego's Pedestrian Priority Model (PPM). Pedestrian opportunity and constraint areas are identified in **Figure 5-1**.

Safety

Facilitating the safe movement of pedestrians is key to increasing the propensity of walking in an area. Locations with three or more collisions involving pedestrians over a 5-year period are concentrated at the intersections of one of the community's major east-west roadways, Mira Mesa Boulevard. The following intersections each have 3 or more collisions between October 2012 and September 2017:

- Mira Mesa Boulevard & Westmore Road/Marbury Avenue
- Mira Mesa Boulevard & Westview Parkway
- Mira Mesa Boulevard & Black Mountain Road
- Camino Ruiz & Capricorn Way
- Black Mountain Road & Gemini Avenue
- Mira Mesa Boulevard & Mira Mesa Mall
- Mira Mesa Boulevard & Sequence Drive
- Camino Ruiz and Reagan Road/Marauder Way

These intersections are in the denser, central part of the community, with high pedestrian activity due to adjacency to retail, office, residential, and schools. Many of the intersections identified above have long crossing distances (90' – 155') and are heavily travelled by pedestrians and vehicles experiencing delay, making both pedestrians and motorists more aggressive in their decision-making.

Connectivity

Connectivity within the pedestrian network is important to facilitate the safe and efficient movement of pedestrians in an area. Missing sidewalks discourage walking trips and may cause pedestrians to take longer routes to get to their destinations. The majority of the Mira Mesa community has a complete sidewalk network, including a pedestrian bridge at the north intersection leg of Galvin Avenue and Black Mountain Road.

Missing sidewalk on the south side of Mira Mesa Boulevard between Scranton Road and Lusk Boulevard stands out as one missing sidewalk link that would benefit the community by connecting the employment area and commercial / retail destinations within the Sorrento Valley employment area.

Camino Ruiz between Carroll Canyon Road and Jade Coast Drive is currently missing sidewalk on both sides of the roadway. The east side provides an asphalt raised area that is not classified as sidewalk. Although this segment of Camino Ruiz cuts through undeveloped land, the lack of sidewalk still prevents connectivity between the industrial and residential areas in the southern portion of Mira Mesa and the residential areas south of Mira Mesa Boulevard. The missing sidewalks should be completed with future developments along the east and west sides of Camino Ruiz.

The south side of Miramar Road between Commerce Avenue and Kearny Mesa Road provides an asphalt raised area that is not classified as sidewalk but is utilized by pedestrians at transit stops and could benefit from upgrading the raised area to concrete sidewalk.

There are also several roadways with missing sidewalks within the industrial area on the south side of the community including Production Avenue, Distribution Avenue, Carroll Way, Trade Street, Dowdy Drive, Silverton Avenue, Cabot Drive, Arjons Drive, and Activity Road. Providing continuous sidewalk in this area could encourage longer walking trips and improve first-mile / last-mile connections for those using Bus Route 31 to access these destinations. Many local breweries are also located in this area and could benefit from sidewalks to encourage activity between neighboring breweries.

Pedestrian Activity

Current pedestrian activity is highest near the Mira Mesa Mall and Miramar College. Intersections along Mira Mesa Boulevard and Black Mountain Road in these areas experience high pedestrian activity.

Demand

Pedestrian priority areas were determined using the City's PPM. The model evaluates community characteristics including demographic data, traffic volumes and speed, pedestrian collisions, presence of street lighting, location of transit stations, and land uses such as residential, office, commercial/retail, schools, and parks. The model uses these factors to identify areas where both pedestrian demand and detractors are high, thereby indicating a need to focus resources in these locations.

The PPM identifies the areas surrounding the Miramar College Transit Station, as well as the area around the Mira Mesa Boulevard and Camino Ruiz intersection as having the highest pedestrian priority. These areas encompass Miramar College, several other elementary, middle and high schools, five community parks, Mira Mesa Market Center, Mira Mesa Mall, and several high-density housing complexes.

Quality

Based on the segment PEQE analysis, there is one high-quality pedestrian facility in the Mira Mesa community, the pedestrian bridge over Black Mountain Road on the north side of Galvin Avenue. Facilities along major roadways do not have a buffer between the travel lanes and the sidewalk, have obstructions in the 5-foot clear zone, and do not satisfy lighting requirements. Enhancements such as providing landscaped buffers, buffered bike lanes, or parking to increase the separation between travel lanes and the pedestrian, relocating obstructions outside of the 5-foot clear zone, and installing additional street lights along pedestrian facilities would improve the quality of these facilities.

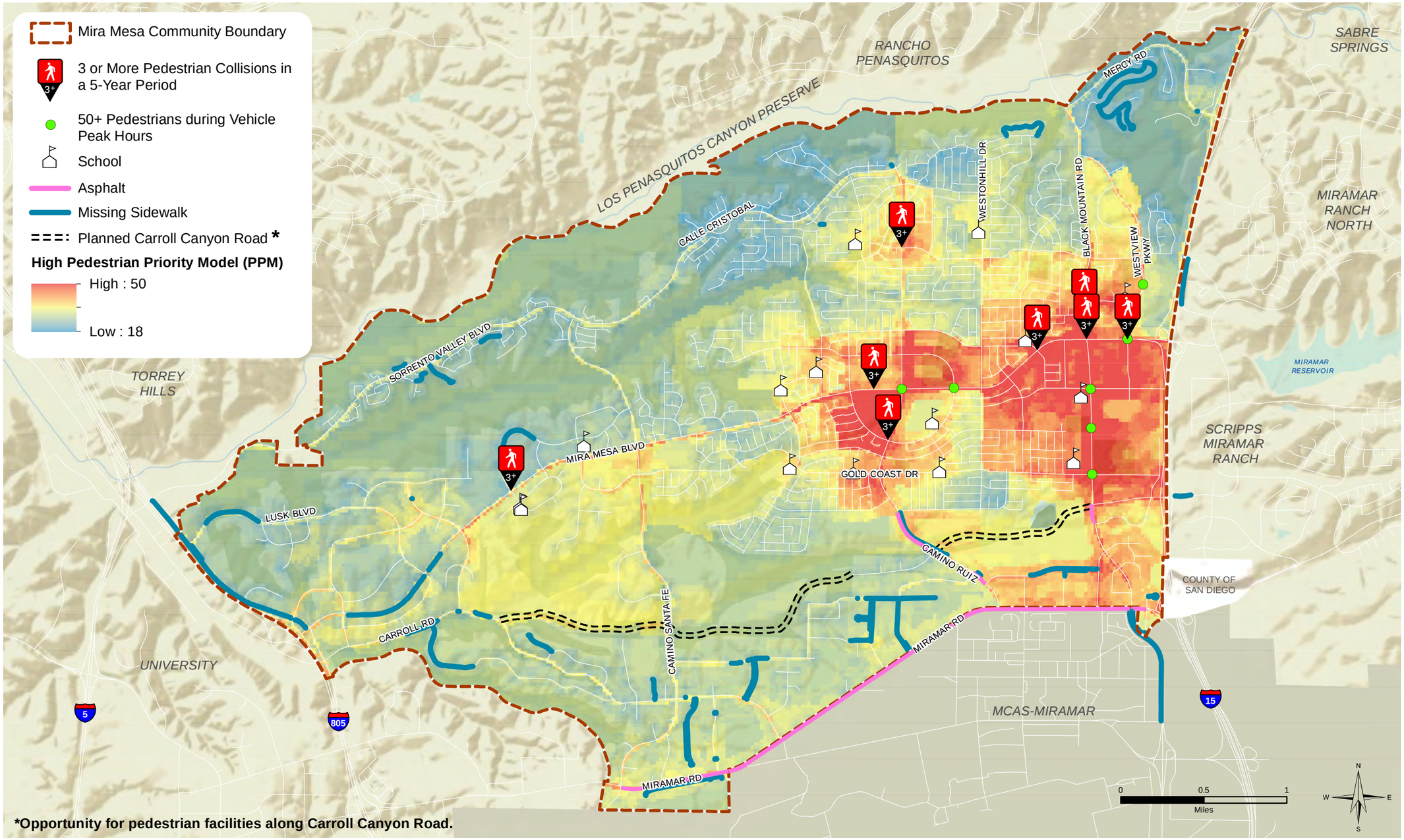
Regarding the intersection PEQE anaysis, the community of Mira Mesa does not provide any curb extensions, pedestrian lead intervals, or raised crosswalks. Very few of the intersections studied contain "No Turn on Red" signs, enhanced pedestrian signs, or pedestrian countdown timers. Approximately one third of the intersections provide high visibility crosswalks and/or advanced limit lines, and less than half of the intersections have curb ramps that meet ADA requirements. Upgrading curb ramps to meet ADA standards, installing high-visibility crosswalks and advanced limit lines, or providing any of the pedestrian crossing enhancements discussed would improve the quality of these intersections.

Planned Pedestrian Improvements

The City's Pedestrian Master Plan – City-wide Implementation Framework Report (2006) established pedestrian route typologies to categorize sidewalks by function and environment. These typologies work to define the function which a route serves and establishes a hierarchy for the development of priority pedestrian improvements. The route type purpose, adjacent street classifications, and adjacent land uses are identified for each typology. The route typology assessment for the pedestrian study area identified only two pedestrian route types within the Mira Mesa community: connector and neighborhood streets.

Additionally, the Framework Report acknowledges there should be flexibility in the treatments and amenities for pedestrian facilities. **Figure 5-2** describes four treatment levels to consider for pedestrian facilities, including premium, enhanced, basic, and special use walkway improvements. Each feature is labeled as required, suggested, suggested if conditions or standards are met, or not applicable.

Districts, corridors, and connectors are the most typical pedestrian route types in communities; however, there are no district or corridor routes identified in the Mira Mesa community. The community has connectors, neighborhood, ancillary facilities (pedestrian bridge) and trails, which make this community unique and desirable for pedestrian travel.



*Opportunity for pedestrian facilities along Carroll Canyon Road.

Pedestrian Opportunity and Constraint Areas

Figure 5-2 Pedestrian Route Type Treatment Levels and Potential Improvements

TREATMENT LEVEL:	Treatment Level 1 "Premium" Walkway Improvements	Treatment Level 2 "Enhanced" Walkway Improvements	Treatment Level 3 "Basic" Walkway Improvements	Treatment Level 4 "Special Use" Walkway Improvements
Route Types Receiving These Treatment Levels (Unless Special Circumstances Exist*)	District Route Type / Special Pedestrian Zone	Corridor Route Type	Connector and Neighborhood Route Type	Path & Ancillary Route Types
*Special Circumstances that Warrant a Higher Treatment Level than Normal. Requirements in Each Column would Increase to the Column on its Left	Already Uses Highest Treatment Level	If within 1/4 mile of Transit/ School/ Ped. High Use/ Major Arterial	If within 1/4 mile of Transit/ School/ Maj. Commercial Facilities/ Maj. Arterials	Case-by-Case Basis
Provide Accessible Facilities Such As:				
1A) Curb ramps	!	!	!	?
2A) Audible/visual crosswalk signals	!	!	?	?
3A) Walkways & ramps free of damage or trip hazards	!	!	!	✔
4A) Pedestrian paths free of obstructions and barriers	!	!	!	✔
5A) Sidewalks with limited driveways and minimal cross-slope	!	✔	✔	✔
6A) Re-grade slope of walkway to meet ADA / Title 24 standards	?	?	?	?
7A) Repair, slice or patch lifts on walk surfaces or reset utility boxes to be flush	?	?	?	?
Provide Safety Features Such As:				
1S) Median refuges (a safe place to stand in the street)	!	✔	-	-
2S) Pedestrian popouts (curb / sidewalk extensions into street)	✔	✔	-	-
3S) High visibility crosswalk striping	!	✔	-	?
4S) Raised crosswalks or special paving materials to denote crosswalks	✔	✔	-	?
5S) Advance stop bars >10 feet from crosswalk	✔	✔	!	?
6S) Radar Speed Monitor & Display	?	?	?	?
7S) Reduced curb radii	✔	✔	✔	-
8S) Early pedestrian start at crossing signal (Lead Pedestrian Interval)	✔	?	-	?
9S) No Turn on Red at Intersection	?	?	?	?
10S) Mid-block crosswalks with ped. flashers but no traffic control	-	-	✔	-
11S) Automatic pedestrian detection & signal control	✔	-	-	?
12S) Mid-block crossing with signs, median or curb ext. & flashing lights in road	?	?	-	?
13S) Mid-block crosswalks with ped. actuated traffic control device	✔	?	-	-
14S) 1-Lane Mid-block with high contrast crossings, signs & center lane marker	?	?	✔	?
15S) Parkway planting for buffer between sidewalk and cars	!	!	!	?
16S) On-street parking for buffer between sidewalk and cars	!	✔	✔	-
17S) Adequate levels of pedestrian lighting	!	!	✔	✔
18S) Various traffic calming measures	✔	✔	✔	-
19S) Enforcement, education or encouragement solutions	?	?	?	?
20S) Missing sidewalks added or provide adeq. walk width clear of obstructions	?	?	?	?
Improve Walkability by Providing:				
1W) Above minimum walkway widths (> 5')	!	✔	?	?
2W) Trees that provide shade on walkways	!	!	✔	✔
3W) Street furnishings for comfort and enjoyment	!	✔	?	✔
4W) Countdown display crosswalk signals	✔	?	?	-
5W) Traffic control for crossings such as traffic signals or "All way stops"	!	✔	✔	✔
6W) Pedestrian scrambles (cross all directions of street)	?	-	-	?
Ensure Connectivity by Adding:				
1C) Missing sidewalk segments in areas where sidewalks mostly exist	!	!	✔	✔
2c) Missing sidewalks in areas where no sidewalks exist at all	!	✔	?	✔
3C) Connection pathways between streets	!	✔	✔	✔
4C) Narrow street widths or adding features to narrow for pedestrians	!	✔	✔	✔
5C) Destinations within walking distance of origins	!	✔	✔	✔
6C) Pedestrian bridges that avoid excessive ramp lengths	?	-	-	?
7C) Pedestrian crossing opportunities for all sides (legs) of an intersection	!	✔	✔	-
8C) Verify that pedestrian distances between land uses are reasonable & direct	?	?	?	?
LEGEND	("!"= required, "4" = suggested, "?"= suggested if conditions or standards met & "-" = not applicable)			

Source: City of San Diego Pedestrian Master Plan – City-Wide Implementation Framework Report (2006)

City of San Diego Transportation Unfunded Needs List (TUNL)

The following pedestrian facility improvements are identified by the City's Transportation Unfunded Needs List (TUNL) as desirable enhancements to the pedestrian environment in the Mira Mesa community:

- Black Mountain Road between Gold Coast Drive and Hillery Dr – Construct mid-block pedestrian bridge across Black Mountain Road
- Flanders Drive at Flanders Place – Install new crosswalk with Pedestrian Activated Flashing Beacons and curb ramps
- Montongo Street at Goleta Road – Install Pedestrian Activated Flashing Beacon
- Avenida Del Gato at Zapata Ave – Install Type 1A Flashing Yellow Beacon with school warning sign facing northbound traffic
- Mercy Road from Chabola Road to Alemenia Road – Install two V-Calm signs
- Calle Cristobal near Frames Port Place – Install one V-Calm sign facing westbound traffic
- Mesa Rim Road – Install two V-Calm signs
- Miramar Way – Install two V-Calm signs
- Camino Ruiz from Westmore Road to Capricorn Way – Install one V-Calm sign facing northbound traffic
- Calle Cristobal from Camino Ruiz to Camino Santa Fe - Install two V-Calm signs

Opportunities

Pedestrian connections are an important part of this community to improve access to multiple key destinations. With the current transit use and upcoming expansion of transit services, connections between transit centers and nearby attractions are vital to transit ridership. First- and last-mile connections should provide quality facilities to encourage walking throughout the community.

Connections along the high-speed, wide roadways in the community should consider alternatives to standard at-grade crossings. Minimizing conflict points between pedestrians and vehicles reduces the risk of collisions and can improve the efficiency of the roadway system and pedestrian experience, encouraging pedestrian travel within the community.

A new pedestrian bridge at Mira Mesa Boulevard near Westview Parkway would benefit pedestrians as it would reduce pedestrian conflicts with high volume/speed vehicles and create a more pleasant crossing experience across Mira Mesa Boulevard, which is a wide and busy intersection. This could also provide an opportunity for creating a gateway to the Mira Mesa community. Other locations for pedestrian bridges may also be considered to support redevelopment or new transit connections. Intersection features such as protected intersections can also help to reduce pedestrian collisions by slowing right turning traffic, and reducing vehicle-pedestrian and vehicle-bicycle conflicts. This may also be explored in combination with bicycle facility intersection treatments.

Providing enhanced pedestrian connections near the large office areas in the western portion of the community could also encourage more walk trips, both commute and non-commute. Best efforts to improve the quality of the pedestrian facilities such as providing wider walkways, accessibility to transit, and buffer from vehicles will be considered in this update. The ideal environment would be a campus-like feel where

walking is the preferred mode of transportation, and the roadway is designed for pedestrians by including reduced crossings distances and lower travel speeds.

Constraints

It is important to take into consideration existing freeway and topographic barriers within the Mira Mesa community, as previously mentioned in Chapter 4. The Mira Mesa community is bounded by Interstate 805 to the west, Interstate 15 to the east, the MCAS Miramar Airport to the south, and Los Peñasquitos Canyon to the north. The bordering canyons and freeways create barriers for access in and out of Mira Mesa to neighboring communities. Major corridors such as Mira Mesa Boulevard, Camino Santa Fe, Camino Ruiz, and Black Mountain Road are also responsible for internally dividing the community into sections, limiting the connectivity within the community.

Creating additional connections across freeways and canyons may be difficult to implement. However, the community plan update can focus on improving the existing connections at freeways and facilitating recreational walking within the canyons.

5.2 BICYCLE

Bicycle infrastructure should provide for the safety and comfort of its users, and the bicycle network should be well connected across a community. Safety and comfort are paramount considerations, given that active travelers are more exposed and vulnerable than those inside a vehicle. Residential roadways are generally inviting to bicyclists. The wider, high-speed roadways and intersections typically discourage bicycle trips. These areas are often where a community needs to focus its bicycle infrastructure efforts. Network connectivity is also important, as gaps in the bicycle network can also discourage bicycle travel within the community. The bicycle network should be made up of a combination of short-haul and long-haul facilities to encourage internal trips in the community as well as regional trips to adjacent communities.

The Mira Mesa community has several areas for improvement based on the analyses performed. They are identified by locations with a high number of bicycle collisions, the amount of stress likely to be experienced by a bicyclist, lack of existing bicycle facilities, and high cycling demand. Bicycle opportunity and constraint areas are identified in **Figure 5-3.**

Safety

The following locations in the community had three or more collisions involving a bicycle in the 5-year period analyzed:

- Mira Mesa Boulevard & Camino Ruiz
- Mira Mesa Boulevard & Westview Parkway
- Mira Mesa Boulevard & Westmore Road/Marbury Avenue
- Miramar Road East of Commerce Avenue/Milch Road

These intersections lack bicycle intersection treatments, with the majority occurring along the major east-west thoroughfare within the community, Mira Mesa Boulevard. For most of these intersection approaches, a bicycle facility is provided upstream of the intersection, but the intersection approach itself does not contain a bicycle intersection treatment such as a bike pocket, leaving the bicyclists vulnerable and requiring them to merge with vehicles at the intersection.

Quality

Bicycle Level of Traffic Stress (LTS) is high (LTS 3 or 4) on all major roadways in the Mira Mesa community. These roadways are nearly all higher speed, high volume arterials with little or no accommodations made for bicyclists. Due to the land use patterns and barriers in the community, traveling between areas of the community requires the use of these roadways. Thus, finding opportunities to introduce low-stress facilities along some major roadways to allow for safe bicycle travel within the community is necessary to improve the overall bicycle experience and encourage more cycling within the community. Not every roadway will be able to accommodate bicycle facilities, but an integrated east-west and north-south route near the residential, school, and retail areas should be determined.

Activity

Intersections near the Sorrento Valley Station and near Miramar College Transit Station experience high bicycle volumes. This is likely first-mile, last-mile connection trips to transit. Similarly, intersections along

Black Mountain Road also have high bicycle activity. One other location noted with high activity is the intersection of Mira Mesa Boulevard and Flanders Drive. This intersection likely has high bicycle activity as bicyclists use Flanders Drive as an alternative route to Mira Mesa Boulevard, with the decision on route choice being made at this intersection.

Demand

Bicycle demand was assessed using the City's Bicycle Demand Model (BDM). Demand is highest along the major roadways in the study area. Streets including Mira Mesa Boulevard, Camino Santa Fe (south of Mira Mesa Boulevard), Camino Ruiz (south of Mira Mesa boulevard), Black Mountain Road, and Miramar Road were found to be in the top 25 percent of bicycle demand in the Mira Mesa community. These streets are continuous across the community, and thus are highly desirable for making connections throughout the Mira Mesa community.

Connectivity

Connectivity will be improved with the construction of the remaining section of Carroll Canyon Road. This roadway will be constructed with future development and will provide a major east-west connection parallel to Mira Mesa Boulevard. Additional connectivity is limited due to the canyons dispersed throughout the community. Upgrades to existing bicycle facilities will improve the low-stress connectivity. Providing comfortable routes to traverse the entirety of the community will be a focus of the plan update.

Opportunities

To increase bicycle commute, it is important to create a low-stress bicycle network which can connect retail, office, residential and schools. Arterials and collectors connect these land uses in the Mira Mesa community, while the majority of low-stress bicycle facilities in the community are located on local and neighborhood roadways. The community needs more low-stress facilities to increase safe and comfortable bicycle connectivity and encourage more bicycle use within the community.

Due to various roadway elements including high vehicular speeds or constrained roadway widths, portions of the major east-west and north-south corridors may not be feasible options for low-stress bicycle routes. However, several parallel routes such as Flanders Drive, Gold Coast Drive, Westmore Road, Capricorn Way, Montongo Street, and Parkdale Avenue can provide low-stress facilities with lower cost enhancements such as traffic calming, bike lane buffers, and intersection treatments. These facilities should be evaluated for trade-offs such as lane narrowing, parking removal, and road diets to determine the most desirable corridors for low-stress bike facilities. Alternatively, if the roadway speeds cannot be reduced via traffic calming measures, adding vertical separation to provide a Class IV bikeway creates a lower traffic stress facility (LTS 1).

The future alignment of Carroll Canyon Road offers a great opportunity to construct the first Class IV facility in the community and provide a low-stress east-west across the community.

There are also roadways with intermittent bicycle facilities that could benefit from more continuity by reallocating the roadway to provide more space for bicycles. Specifically, Camino Ruiz, Mira Mesa Boulevard, and Carroll Road alternate between Class II and Class III bike facilities, and Black Mountain

Road alternates between buffered bike lanes and standard bike lanes, with a small portion of a Class III bike route.

Mira Mesa Boulevard has been identified as a regional bicycle facility that should have a Class II or better bicycle facility.

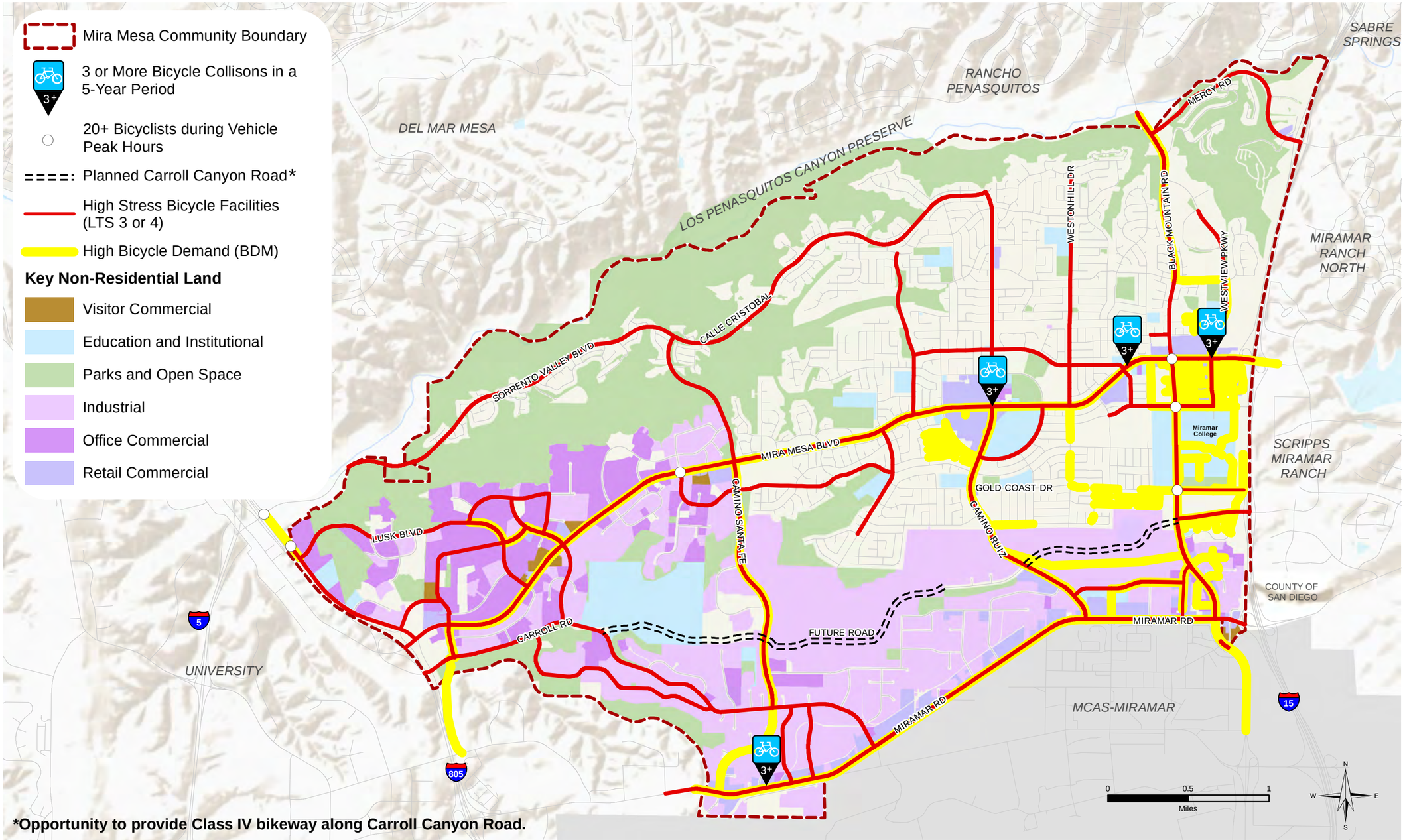
Constraints

Freeways, canyons and missing facilities create barriers for cycling for members of the Mira Mesa community. Mira Mesa Boulevard runs east-west across Mira Mesa, through the heart of the community where pedestrian, bicycle and transit demand is highest. This is also the corridor with the highest pedestrian- and bicycle-involved collisions. The high traffic volumes, speeds, and number of lanes create a divide of the community into a northern and southern portion, with extremely long crossing distances. The Class II bike lanes on Mira Mesa Boulevard occasionally striped without a buffer next to travel lanes with vehicles traveling up to 55 mph provides a false sense of safety for bicyclists. Further the bike lanes occasionally abruptly transition into a Class III bike route leaving bicyclists stranded and vulnerable. The roadway width along a majority of Mira Mesa Road prevents the construction of a low-stress bicycle facility without removing travel lanes or reducing the median width. In certain constrained areas, considerations will need to be made for parallel facilities to balance the needs of all modes and identify key connections and facilities needed to encourage cycling within the community.

Due to the lack of parallel options into Mira Mesa, consideration should be given to enhancing the bike facilities on Black Mountain Road and Vista Sorrento Parkway to connect adjacent neighborhoods to low-stress routes within Mira Mesa.

Black Mountain Road and Vista Sorrento Parkway are the only major north-south connection into the community from adjacent communities north of Mira Mesa. Black Mountain Road, on the east side of Mira Mesa connects to Rancho Peñasquitos, and Vista Sorrento Parkway, on the west side of the community connects to Torrey Hills. Due to the lack of parallel options, consideration should be given to enhancing the bike facilities on Black Mountain Road and Vista Sorrento Parkway to connect adjacent neighborhoods to low-stress routes within Mira Mesa. Similarly, consideration should be given to enhancing any or all of the four connections to communities east of Mira Mesa across Interstate-15 (Mercy Road, Mira Mesa Boulevard, Carroll Canyon Road, and Miramar Road).

On the west side of the community, a major barrier is presented by Interstate-805, which separates Mira Mesa from the Sorrento Valley Station and further to the University community. Sorrento Valley Boulevard under I-805 does not have any additional roadway width to be reallocated to bicyclists to provide a low-stress connection from the station into the community. This roadway width is constrained by the I-805 overpass bridge abutments.



*Opportunity to provide Class IV bikeway along Carroll Canyon Road.

Bicycle Opportunity and Constraint Corridors

5.3 TRANSIT

The City of Villages strategy supports expansion of the transit system by encouraging multi-family housing, employment centers, and other higher-intensity uses to be located in areas that can be served by high quality transit services. This will allow more people to live and work within walking distance of transit, and will provide the opportunity for more people to use transit rather than single-occupancy vehicle trips. The Mira Mesa community is relatively well served by transit with a large portion of the community within a quarter-mile of a transit stop, and experiences high transit ridership along the more frequent routes. The highest public transit ridership levels in the community are along Bus Routes 921, 237, 964, and 20, all of which stop or end at the Miramar College Transit Station. With the exception of Bus Route 964, which serves as a local route, all routes within Mira Mesa provide access to major employment areas within the City of San Diego.

Transit opportunity and constraint areas are identified in **Figure 5-4**.

Safety

Since most transit trips begin and end on foot or by bike, it is crucial that users can safely access transit stops so that trips to and from the transit stops are comfortable and low-stress. High bicycle- and pedestrian-involved collisions near a transit stop may indicate safety concerns for transit users. Transit area safety was assessed by looking at the combined number of pedestrian- and bicycle-involved collisions. Locations with four or more collisions near a transit stop were all located along the Mira Mesa Boulevard, Black Mountain Road, or Camino Ruiz corridors. These locations include:

- Mira Mesa Boulevard & Westview Parkway
- Mira Mesa Boulevard & Westmore Road/Marbury Avenue
- Mira Mesa Boulevard & Camino Ruiz
- Mira Mesa Boulevard & Black Mountain Road
- Camino Ruiz & Capricorn Way
- Camino Ruiz & Reagan Road
- Black Mountain Road & Gold Coast Drive

Activity

Miramar College Transit Station, the only major transit stop in the community has the highest boardings and alightings. Not including the Miramar College Transit Station, the ten bus stops with the highest daily boardings and the ten stops with the highest daily alightings include stops near the following intersections:

- Mira Mesa Boulevard & Camino Ruiz
- Mira Mesa Boulevard & Black Mountain Road
- Mira Mesa Boulevard & Pacific Heights Boulevard
- Mira Mesa Boulevard & Shilling Avenue
- Black Mountain Road & Gold Coast Drive
- Black Mountain Road & Activity Road
- Black Mountain Road & Miramar Road
- Barnes Canyon Road & Pacific Heights Boulevard
- Gold Coast Drive & Camino Ruiz

- Zapata Avenue & Kelowna Road
- Camino Ruiz & Capricorn Way
- Westview Parkway & Mira Mesa Market Center

Many of the high boardings and alightings stops are located along Mira Mesa Boulevard and Black Mountain Road. The employment area on the west side of the community has low to moderate ridership. Camino Ruiz where route 964 services the residential area north of Mira Mesa Boulevard also has moderate ridership. Miramar Road has low ridership.

Route 921 is the most heavily utilized bus route in the community, running east-west along Mira Mesa Boulevard between the University of California San Diego and the Miramar College Transit Station. This route services the employment area in Sorrento Valley during the weekdays only, and services the retail and recreational areas near Mesa Verde Park.

Route 964 has the second highest ridership and connects Mira Mesa neighborhoods and destinations to Scripps Ranch neighborhoods and destinations.

These two bus routes with the highest ridership in the community show the desire for connections between Mira Mesa and the adjacent communities. In addition, more routes serving as community circulator routes may be ideal from higher concentrated residential areas within Mira Mesa to shopping centers and employment areas.

Quality

Transit quality was assessed based on amenities provided for the transit user at each stop. Stops that did not meet the minimum requirements identified in the MTS Designing for Transit Manual were generally due to lack of sign and pole, route designation or accessibility. Providing a sign and pole with route designations and relocating obstructions to provide the required clear zone for accessibility can improve the quality at these stops and the surrounding environment for future transit riders.

Connectivity

Transit access was assessed using the quality bike and quality pedestrian connectivity to major transit stops. The Miramar College Transit Station does not have any low-stress bicycle facilities which provide access to the station, due to its location along Hillery Drive and Westview Parkway, both of which experience high levels of traffic stress due to high speeds of vehicular traffic. The station, however has medium quality facilities for pedestrians to access the station.

Demand

Transit demand was assessed through a combination of existing ridership as well as U.S. Census data showing concentrations of housing and jobs. Housing density is highest on the east side of the community, east of Camino Santa Fe and north of the future Carroll Canyon Road alignment. Employment density is focused in the western and southern ends of the community, with jobs concentrated west of Camino Santa Fe, south of Lopez Canyon and south of future Carroll Canyon Road.

Opportunities

On-time performance is an important piece of improving and maintaining transit ridership. The reliability of services is directly affected by the amount of congestion and delay at intersections and along roadway segments. Buses caught in congestion may affect the reliability of a bus route and decrease ridership over time. Based on the 2017 MTS Performance Monitoring Report, Route 964 is currently performing under the MTS on-time performance goal of 90%. This is the one of the highest ridership routes in the community.

Improving reliability can be accomplished with technological improvements such as Transit Signal Priority (TSP) and adaptive traffic signals, and/or striping dedication such as transit only lanes or transit queue jump areas at intersections. These measures should be considered and implemented, where feasible. Also providing adequate bus stop amenities at appropriate locations can reduce delays. The following are operational improvements in the community that are identified by the San Diego Metropolitan Transit System (MTS):

- Bus-only lanes along Mira Mesa Boulevard for Rapid Bus Route 237 to circumvent congestion on the busy corridor and provide an opportunity for TSP on Mira Mesa Boulevard.
- Bus-only lanes along Miramar Road to enhance Bus Route 31 on this high-capacity corridor and better service the employment corridor.
- TSP on Miramar Road.
- TSP on Black Mountain Road between Miramar Road and Mira Mesa Boulevard to enhance transit along this key north-south corridor with dense residential developments and employment.
- TSP for westbound left turns from Hillery Drive (off Interstate-15 Direct Access Ramp (DAR)) onto southbound Westview Parkway to enhance Rapid Bus Route 235 travel time into Miramar College Transit Station.
- Widen and extend Direct Access Ramp (DAR) bridge over Interstate-15 at Hillery Drive to provide connectivity for pedestrians and bicyclists between Mira Mesa and communities to the east. Specifically, this connection can provide access for the Scripps Miramar Ranch community to rapid bus routes.

Additionally, SANDAG's 2015 RTP builds upon local planning efforts by emphasizing the link between land use planning and transportation planning. As it is implemented, the Plan will enhance the movement of both people and goods, as well as break new ground by incorporating components aimed at enhancing public health. The following are planned transit projects identified in the RTP to increase mobility connections for the Mira Mesa community:

- Extend existing Rapid 235 Bus service to Temecula from Downtown San Diego, running through Mira Mesa.
- Double tracking for Coaster with peak frequencies of 20 minutes.
- Rapid 30 Bus service from Old Town to Sorrento Mesa.
- Rapid Route 688 bus service from San Ysidro to Sorrento Mesa via I-805/I-15/SR-52 during peak hours.
- Rapid Route 690 bus service from Mid-City to Sorrento Mesa via I-805 corridor during peak hours.
- High frequency bus route along Carroll Canyon Road.
- Bus service frequency enhancements for routes 110, 237, and 921.

Future considerations will be made for improvements at key intersections and roadways that are experiencing congestion and delay to reduce delay for transit users and encourage more transit use. The construction of the Mid-Coast Trolley service provides great opportunity to connect University and Mira Mesa communities to the major employment center in Downtown San Diego as well as to the US-Mexico Border. To get from Mid-Coast stops to the Mira Mesa community, an aerial skyway is proposed to travel into the employment area in Sorrento Valley within the western portion of the community. This would provide reliable travel time close to many major employers.

Relocation of the Sorrento Valley Station has also been considered and recommended in previous planning efforts. The *Project Report for I-5/Sorrento Valley Road Interchange Improvements*[13] recommends relocating the Sorrento Valley Station south, close to the interchange of Mira Mesa Boulevard and I-805. This would modify the transit connections to the community and would need to be evaluated for connections by all modes. The relocation provides an opportunity to explore first- and last-mile pedestrian and bicycle improvements for access to the Sorrento Valley employment center.

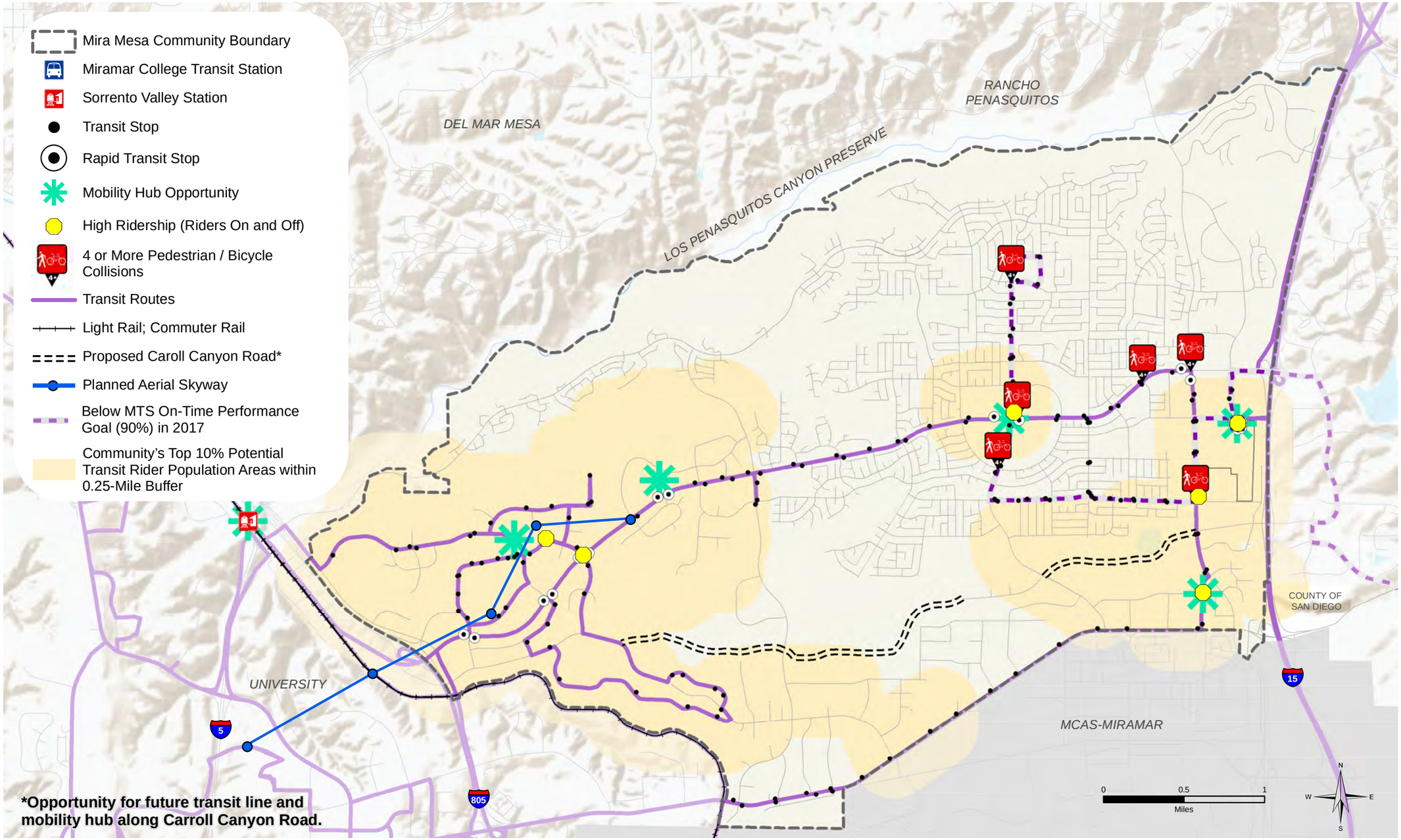
A rapid bus route will be considered for the future roadway alignment of Carroll Canyon Road to service the mixed-use developments planned for construction. Mobility hub locations will also be evaluated along Carroll Canyon Road and other areas within the community. Mobility hubs are places that help connect people to employment, housing, shopping, and recreation by walking, biking, transit, and shared mobility.

As land uses continue to change in Mira Mesa and neighboring communities, MTS will consider transit routes for service upgrades between residential, recreational, and employment areas.

Constraints

The cost of providing the infrastructure for and operations of transit services limit the areas in which transit can be provided. Topographic barriers and limited roadways across communities reduce the number of available options for transit to connect to neighboring communities. Although bordering freeways provide opportunities for transit riders to reach destinations further away, sharing facilities with single-occupant vehicles within the community and along the freeways increases travel time for transit riders discouraging transit use to distant destinations. Transit routes and connections follow areas of high ridership potential which is associated with high population areas or high employment demands. Transit is also only as good as its connections when on fixed routes. Consideration of internal community service and connections to external origin-destination pairs needs to be considered in transit planning.

[13] Project Report for I-5/Sorrento Valley Road Interchange Improvements, City of San Diego Public Works / AECOM, January 2015



Transit Opportunity and Constraint Areas

5.4 VEHICLE

Streets and freeways comprise the framework of our transportation system and play a major role in shaping the community and quality of life. A street system plagued by congestion can have major impacts on the community. Roadway opportunity and constraint areas are shown in **Figure 5-5**.

Arterials

Although Mira Mesa is readily accessible by freeway, travel to specific points within the community by means of arterial roadways can be difficult during the peak hours. In the morning and evening peak hours, congestion occurs on freeway-serving roadways as commuters travel into, out of and across the community for work, school, or other activities.

These high vehicular traffic volumes result in a number of roadway segments operating at substandard levels of service. In particular, east-west roadways such as Mira Mesa Boulevard, Miramar Road, Capricorn Way, Carroll Canyon Road, Flanders Drive, Gold Coast Drive, and Capricorn Way experience LOS E and F conditions or below. Black Mountain Road, north of Mira Mesa also experiences LOS E conditions and is the only access to the community from areas northeast of the Mira Mesa.

Freeways

The two freeways that serve Mira Mesa are I-15 and I-805. These freeways are utilized by residents, employees, and patrons of Mira Mesa, as well as significant regional pass-through trips. In general, a majority of the I-15 and I-805 roadway segments are operating under unsatisfactory conditions with a LOS E or F in either or both of the AM or PM peak hours.

Based on the analysis, northbound I-805 and southbound I-15 are more heavily utilized during the AM peak, while southbound I-805 and both directions of I-15 are more heavily utilized during the PM peak. The worst congestion occurs on the southbound portion of I-805 between Sorrento Valley Boulevard and Mira Mesa Boulevard, where there are only three general purpose travel lanes.

Intersections

Twenty-two (about one-quarter) of the 92 study area intersections currently operate at LOS E or LOS F during one or more of the peak commute hours. Mira Mesa Boulevard, Camino Ruiz, and Black Mountain Road experience some of the worst intersection congestion during both peak periods.

- 7 intersections along Mira Mesa Boulevard operate at unacceptable LOS during either or both the AM and PM peak hours
- 7 intersections along Black Mountain Road operate at unacceptable LOS during either or both the AM and PM peak hours
- 4 intersections along Camino Ruiz operate at unacceptable LOS during both the AM and PM peak hours
- 2 intersections along Miramar Road operate at unacceptable operations during either or both the AM and PM peak hours.
- 2 intersections along Vista Sorrento Parkway operate at unacceptable operations during both the AM and PM peak hours.

- The I-15 on and off ramp intersections at Carroll Canyon Road operate at unacceptable LOS during both the AM and PM peak hours

Safety

It is important to ensure roadways are safe for travel by all modes of transportation. In order concentrate on areas with the greatest need the ten intersections with the highest number of vehicular collisions are listed below:

- Mira Mesa Blvd & Westview Pkwy
- Mira Mesa Blvd & Black Mountain Rd
- Mira Mesa Blvd & Camino Ruiz
- Miramar Rd & Camino Ruiz
- Miramar Rd & Carroll Rd
- Miramar Rd & Black Mountain Rd
- Mira Mesa Blvd & Scranton Rd
- Miramar Rd & Kearny Villa Rd
- Mira Mesa Blvd & Marbury Ave / Westmore Rd
- Miramar Rd & Camino Santa Fe / Frost-Mar Pl

On January 11, 2019, Circulate San Diego, a non-profit organization, compiled an updated "Fatal Fifteen Intersections" list recommendation to Councilmembers to reflect Vision Zero goals of eliminating fatal crashes. Mira Mesa encompasses three of these intersections due to repeat collisions that could warrant safety enhancements:

1. Camino Ruiz & Reagan Rd
2. Mira Mesa Blvd & Marbury Ave / Westmore Rd
3. Scranton Rd & Morehouse Dr

Parking

Roadways in the Mira Mesa Community with high rates of observed on-street parking occupancy (over 85%) during one or more peak periods are generally located near employment centers. In particular, segments include Pacific Heights Boulevard, Pacific Center Boulevard, Pacific Mesa Boulevard, Scranton Road, Carroll Road, Activity Road and Black Mountain Road, especially in the mid-day peak hour. Other roadways with higher parking utilization include Marauder Way, Westview Parkway, and Galvin Avenue, as well as sections along Camino Ruiz. Additionally, large portions of the Mira Mesa community do not permit parking along major arterials such as Mira Mesa Boulevard and Miramar Road.

Greater management of parking spaces can help achieve mobility, environmental, and community development goals. Motorists are accustomed to "free" parking at many destinations, but no parking is without cost. The real cost of parking is paid by consumers to property owners through higher rents, lower salaries, higher costs of goods and services, or taxes – regardless of how many cars we own or how much we drive. This system of "bundling" parking costs with other goods and services lowers the out-of-pocket expenses of driving and makes other types of travel seem expensive by comparison. Research suggests that when the real costs of parking are passed on directly to drivers, the demand for parking typically drops,

and alternative modes of transportation, where available (such as transit, carpooling, walking, and bicycling) become more attractive and viable for certain trips.

Planned Roadway Improvements

Carroll Canyon Road extension is a planned connection to be made within the Mira Mesa community, creating another, needed east-west corridor between I-805 and I-5. The roadway connection will be the shared responsibility of private development and City of San Diego. This new connection is anticipated to alleviate traffic on Mira Mesa Boulevard and Miramar Road, which may provide opportunities to enhance the pedestrian, transit and bicycle network within the community.

Planned improvements within the community, such as the Carroll Canyon Road extension and adaptive signal operations along Mira Mesa Boulevard corridor will help to provide more and new opportunities for motorists to travel more efficiently within the community. In addition, consideration should be given to enable safe, attractive and comfortable access for pedestrian, bicycle, and transit users in order to encourage residents, students and employees of Mira Mesa to travel throughout the community by alternative modes. These considerations may also alleviate congestion in areas currently experiencing excessive delays. New development throughout the community can provide additional first- and last-mile connections to give people options of getting to where they need to be and advances in technology can also help to improve capacity of the existing infrastructure.

Opportunities

The roadways in the Mira Mesa community are primarily built out and the primary mode of travel within the community is single occupancy vehicles. The planned Carroll Canyon Road extension will provide an additional east-west connection across the community and is anticipated to shift some of the vehicular traffic along Mira Mesa Boulevard and Miramar Road. However, planned developments within the community will help inform how this extension will influence roadway users.

Connectivity in the community may benefit from the conversion of on-street parking to exclusive transit or bicycle facilities. This can encourage some trips to be made by alternative modes to driving which can eliminate some vehicles along a roadway. Providing enough off-street parking to accommodate the adjacent land uses, and repurposing the roadways to accommodate other modes of travel may be needed to accommodate future growth. The effect of removing on-street parking will need to be considered on an individual project basis.

Circulate San Diego has recommended pedestrian safety improvements that could be implemented at the three Fatal Fifteen intersections within Mira Mesa This can help to facilitate connections for all modes of travel.

Considering the bicycle network recommendations to provide parallel low-stress options for bicycling, enhancements to Mira Mesa Boulevard can prioritize vehicles rather than creating space for all modes of transportation.

Some of the arterials that experience unacceptable operations based on ADTs are located in residential areas, which could be indicative of cut-through traffic avoiding congestion on other major arterials. These roadways include Westmore Road, Gold Coast Drive, and Capricorn Way. Traffic calming measures could

be implemented to reduce traffic volumes in the residential areas, and create lower stress conditions for pedestrians and bicyclists accessing schools, parks and other key destinations from their home.

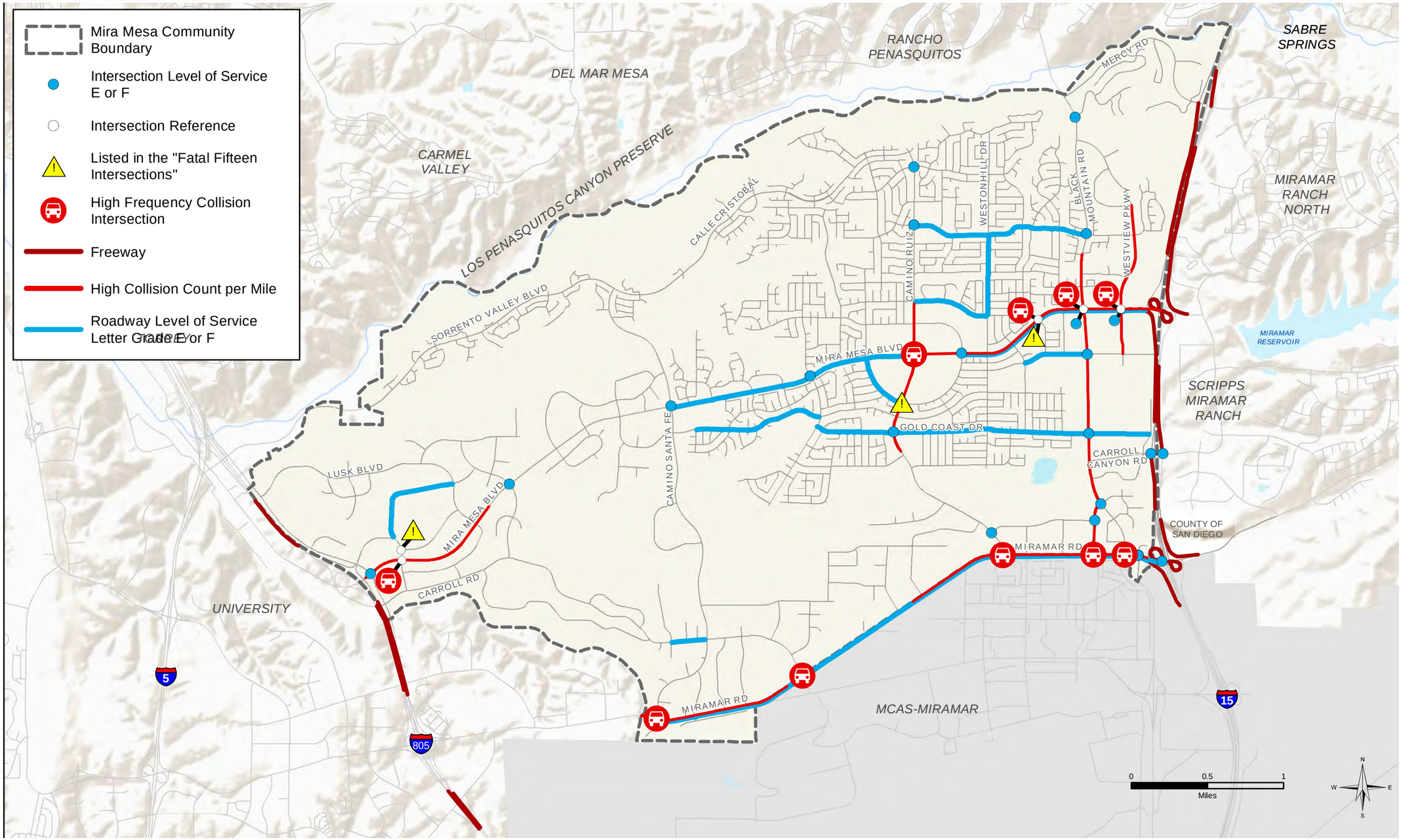
Constraints

The Mira Mesa community is bounded by freeways, canyons, and MCAS Miramar (Military facilities), limiting access and connections to adjacent neighborhoods on all sides of Mira Mesa. The canyons on the north side of the community present a unique barrier to the community. Black Mountain Road and Vista Sorrento Parkway are the only connections to the adjacent communities to the north of Mira Mesa, meaning all vehicles accessing Mira Mesa from the north utilize these two congested roadways. Providing another north-south connection to the north would require crossing canyons and lands dedicated to preserve habitat for animals.

Similarly, MCAS Miramar on the south side prevents another north-south connection to communities south of Mira Mesa as it is dedicated military land.

Additionally, many of the freeway underpasses and overpasses restrict the ability to increase capacity. For example, Sorrento Valley Boulevard under the I-805 overpass is at its full capacity due to right-of-way constraints under the bridge. This is a main connection between the Sorrento Valley Station west of I-805 and the major employment center east of I-805.

Lastly, many of the community's arterial roadways are built out with little opportunity to expand or widen. Mira Mesa Boulevard and Black Mountain Road are major east-west and north-south roadways within the community that provide access to freeways as well as neighboring communities; these roadways experience congestion, excessive delays at intersections, and a large number of collisions. The majority of these roadways have built out development along both sides of the roadway which limits the amount of space available.



Vehicle Opportunity and Constraint Corridors